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THE PROGRESS AND PRESENT ASPECT OF MEDICAL SCIENCE*

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Whoever has the honour to deliver the Gilchrist Lecture is spared the difficulty of a choice of subject, for the text laid down for him is "The Progress and Present Aspect of Medical Science." That, it need hardly be said, is a very wide subject, and there is no one who has the knowledge to treat it adequately even if an hour's lecture gave him the time. I must therefore apologize in advance for inevitable superficiality.

Further, in depicting the present aspects of medical science, it is impossible to avoid considering medical practice also, for medicine is not a science which is studied for its own sake, but only in order that it may be applied in the prevention and treatment of disease. I should also premise that much of what I shall have to say applies especially to conditions in this country, or at all events in the more highly industrialized countries of the temperate zone.

Notwithstanding what has been said above, the purpose of the lecture is praiseworthy, for it is worth while to attempt from time to time, however imperfectly, to see where we stand. I sometimes wish, indeed, that there could be a sabbatical year in medicine during which all research and publication should cease, so that we might have leisure to sift the grain from the chaff and to consolidate the ground already won and plan out fresh advances; to get out of the trees, in short, and survey the wood as a whole. But that, I recognize, is merely a dream.

The Present Confusion

The first impression that any survey of the present aspect of medical science must produce is one of confusion. An immense amount of investigation into the causes and treatment of disease will be found going on, but too often it is ill conceived and ill directed, with the result that much so-called "research" is a mere beating of the air, a form of solemn trifling, wasteful alike of time and money. This confusion is reflected in medical publications, which have become excessive in number, and often so highly specialized that their very terminology is only to be understood by the initiated; full of facts and observations, but poor in ideas, in fertile hypotheses, and in helpful generalizations. We find the same disorder in the application of medical science to practice, for, in this country at least, our health services show a chaotic mixture of individualism and socialism, of commerce, charity, and State aid.

Now it may be admitted at once that much of this confusion is inevitable, for medical science is engaged in a constant fight with disease, and a battlefield is not the place to look for order. None the less there might be more planning and direction of research; a reduction in the quantity and an improvement in the quality of medical literature, and some means of making it easier of access, as well as a better organization of the different services concerned with health. The recent report of the Committee on Scottish Health Services may perhaps pave the way to the last in Scotland.

Passing from these generalities it will be convenient to consider the present aspect of preventive and curative medicine separately, although, of course, there is no sharp line of distinction between them, curative medicine being often also really preventive.

Preventive Medical Science

Of the two divisions there can be no doubt that preventive medical science, although much the younger, has the greater achievements to its credit, for it has abolished some diseases entirely and greatly diminished the incidence of others; it has enormously reduced the death rate and has added materially to the expectation of life. These triumphs, of course, are not entirely due to medicine. To a very large extent they are the result of an improvement in the economic condition of the people, to the spread of education and of temperance, and to mechanical inventions of one sort and another; but even allowing for these factors medical science can still claim a large share of the credit. It would seem, indeed, as if, in this country at least, there was not much more to be done in "municipal hygiene"—that is to say, in the provision of pure water supplies, efficient sanitation, and so forth, and that the law of diminishing returns is beginning to assert itself, an increase of expenditure by public authorities being attended by a smaller dividend in improved health.

At present the efforts of the health authorities still further to reduce mortality and morbidity seem to be in four main directions: (1) improvement of housing conditions by the abolition of slums and overcrowding; (2) betterment of nutrition, especially of children; (3) the general introduction of physical education; (4) an attack on maternal mortality. Let us consider each of these for a moment.

Efforts to Reduce Mortality and Morbidity

1. That better housing should lead to better health needs no argument, for there is a definite correlation between density of population and morbidity, mainly because when people are more closely packed the dangers of infection are increased. On the other hand, it must be remembered that the advantage of more space at home is to some extent counteracted by the increased

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urbanization of modern life and by the tendency of people to crowd together in places of amusement, offices, and public vehicles. It is essential, too, that the advantages of greater air space should not be purchased at the expense of other even greater necessaries such as food.

2. It is perhaps rash to speak of the relation of food to health in this city. That adequate nutrition is essential to health no one would deny, and that in some parts of the world malnutrition or under-nutrition is an active cause of morbidity is undeniable. To what extent these conditions prevail generally in this country except in certain impoverished areas is, however, another matter. I have written at some length on this subject elsewhere (Hutchison, 1936), but here I would only say that, speaking as a clinician, I cannot admit the existence of widespread under-nutrition, or even malnutrition, among our people, and I am of opinion that the improvement in the public health to be effected by improved nutrition, and particularly by an increased consumption of the so-called "protective foods," is not likely to be as great as is often anticipated. That, in short, the marriage of hygiene and agriculture, of which we hear so much, may easily prove a barren one. It is not, one may suspect, a love match, but one mainly of political convenience.

3. Physical education is designed to improve the physique, to strengthen muscle, and to correct deformities. It aims also at making the body a more efficient servant of the mind, and at the development of mental capacity and character. That, wisely directed, it is capable of doing these things there can be no doubt, but it must be remembered that there is no very definite correlation between a well-trained body and immunity to disease, and there is reason to expect that physical education will do more for happiness and character than for health.

4. Maternal mortality is, of course, not an important factor in the national death rate, for the number of women who die in childbirth each year in this country is less than half the number of persons who are killed on the roads. The poignant tragedy of maternal deaths must, however, stir the sympathy of everyone in a degree out of proportion to their mere frequency. That such deaths can be prevented altogether is too much to hope, although to reduce them in this country by at least a quarter is well within the power of preventive medicine. It is not, however, going to be a rapid process, for the first essential is an improved midwifery service, and that cannot be created in a day. We must also face the fact that prevention in this matter is up against certain adverse and partly unescapable circumstances. Among these are the increasing relative number of first-births and the desire, perfectly natural, that parturition should be as quick and painless as possible, which leads to the general and sometimes injudicious use of anaesthetics and to the frequent employment of forceps, or even Caesarean section, and other "labour-saving" devices designed to produce motherhood without tears.

These are the chief preoccupations of the public health authorities in this country to-day, and it will be observed that, with the exception of the attack on maternal mortality, they are not *ad hoc* measures, but are designed to raise the standard of health by fortifying two of the aspects of the "constitution"—the anatomical and the physiological—of which I shall speak later. They are based, therefore, on sound scientific principles, but what effect they will have on the death rate remains to be seen. The chief killing diseases among adults in this country are cardiovascular affections and their consequences, cancer, pneumonia and bronchitis, renal disease, and tuberculosis, and against none of these, except the last, can the above or any other preventive measures at present do much; indeed, as the average age of the population rises, as it is bound to do, there will be a tendency for some of them to become commoner. As regards tuberculosis, however, the death rate has been falling for many years, and is still going down, though to a less degree in young adults than at other ages. To what extent the fall is due to the direct preventive efforts included in what is called the "anti-tuberculosis campaign" is doubtful, for it had been going on for years before that campaign was begun, but there are some authorities who believe that the wave of epidemic tuberculosis has spent itself, and that we are now getting down to the endemic level, where further reduction will be difficult. To this I shall refer again later.

Economic Burden of Invalidity

Morbidity, however, is as much the concern of preventive medicine as mortality, and is an even greater economic burden on a nation. It is a startling fact that in Scotland more than one out of every five insured persons is certified unfit for work at one time or another during the year, and that the days of sickness amount on an average to ten per insured person. The killing diseases, however, are not those which produce most invalidity, for the chief causes of certified incapacity are found to be "influenza" and upper respiratory infections, "rheumatism," "dyspepsia," and minor infections of the skin. These, along with accidents, account for about three-quarters of the sickness among the insured. Now it would be idle to suppose that preventive medicine can do much against these conditions at present, or that it is likely to be able to do much in the immediate future. We may, it is true, discover a means of immunization against "influenza" and the infections of the upper respiratory tract, and that would be a great gain; but the prevention of "rheumatism" in its various forms baffles us, and the conditions vaguely described as "dyspepsia" are not likely to diminish with the increasing strain and complexity of modern life.

Meanwhile it is pertinent to ask whether all this mass of invalidity is either genuine or necessary. By that I do not mean to suggest that any of it is due to deliberate malingering, but rather that much of it may be the result of mental causes: that it represents, in fact, psychoneurosis rather than physical disease. The investigations of Dr. J. L. Halliday (1935) in Glasgow and of Dr. T. M. Ling (1936), as well as those of Dr. Millais Culpin, are suggestive in this respect. Are the conditions of modern industrial life to blame or are we more lacking in grit than our forefathers? Or may it be that in these days of insurance and compensation we can have as much functional disorder as we are prepared to pay for? This, at least, may be said with certainty: that in future psychotherapy will have to take a place in the science of preventive medicine, for the psychological aspect of the constitution is just as important for health as the anatomical or the physiological.

Diseases of Childhood and Infancy

If a further reduction of disease and of premature death among adults is likely to become increasingly difficult the case as regards children is fortunately different. Among *them* the causes of death and of illness are much the same—pneumonia, bronchitis, infectious diseases, and tuberculosis taking the chief toll. The disappearance of rickets, which is rapidly taking place, should at least lessen the mortality from bronchitis and pneumonia in the earlier years, and as regards the infectious diseases we should soon be able almost to abolish diph-

theria by immunization, whilst the use of convalescent serum, when it becomes more generally obtainable, should greatly mitigate the dangers of measles as antiscarlatinal serum has already enabled us to control the really dangerous manifestations of scarlet fever. There is hope, too, that the preventive use of vaccines may lessen the prevalence of whooping-cough, which is so often fatal in early life. Much also can still be done to reduce the number of cases of tuberculosis in childhood by the universal pasteurization of milk and by protecting children more carefully from contact with tuberculous adults. There is one scourge of childhood, however—acute rheumatism—in the prevention of which no progress has been made, nor, considering our ignorance of the environmental conditions which favour its occurrence, does it seem likely to be made in the near future.

The mortality of infants, as distinct from that of children, has fallen by a half in the course of the present century, but it must be remembered that the fall was long overdue, for the death rate in children had declined much earlier. What share preventive medicine has had in the spectacular fall in infant mortality it would be difficult to say, but it is probable that economic factors, smaller families, the invention of dried milk, and the replacement of the horse by the motor have had as much to do with it as the work of welfare centres. The practical disappearance of epidemic diarrhoea, for instance, formerly a main cause of infant deaths, cannot to my mind be attributed to any strictly preventive measures. Be that as it may, it is not reasonable to suppose that prevention can do much more, for nearly half of the total infant mortality is now accounted for by neonatal deaths, the result of injury at birth, prematurity, and parenteral infections, and how difficult it is to prevent such deaths every obstetrician and paediatrist knows. It is arguable, indeed, that a diminution of neonatal deaths (those due to infections excepted) would be a doubtful blessing, for many of the surviving children would probably prove to be defective either physically or mentally, or both.

In later infancy, on the other hand, the science of nutrition now enables us to prevent diseases, such as rickets, formerly often so disabling and indirectly so fatal, whilst as regards the infectious fevers and tuberculosis the preventive measures, by which so much can be achieved in childhood, should yield relatively even greater fruits within the first year of life.

The General Practitioner's Part in Prevention

Before leaving our survey of the progress and present aspects of preventive medical science reference must be made to two contemporary currents of opinion which have a bearing on the subject. One is that the general practitioner should take a larger share in the prevention of disease, and that the medical student, even, should become —to use a *cliché* of the day—" prevention-minded " ; the other is that the community at large should be encouraged in all possible ways to become (to use another catchword) " health-conscious." Let me say a few words about each of these opinions.

Most people, except the very bureaucratically minded, will agree that the practitioner should take his part in the ordinary preventive services, such as ante-natal work, welfare centres, and school clinics, and that his training as a student should enable him to do this efficiently. Those, however, who urge that the ordinary doctor should be more concerned with prevention are mostly not thinking of such activities as these, but would have the idea of " prevention " enter more into private practice. Yet it is difficult to see how this can be done. The practitioner, of course, can and does advise individual patients as to the best means of preserving their health, but there is little beyond this that he can do. It is futile to expect him to preach to all and sundry general rules of health, for in the first place there *are* no such rules which are universally applicable, and in the second place the practitioner would be, thank Heaven, the last man to observe them in his own person. But, it is said, he might help in the prevention of disease by diagnosing it in its earliest stages. On this matter there is a good deal of loose thinking. The question of early diagnosis only arises in more or less chronic conditions, such as cancer, tuberculosis, and the cardiovascular degenerations, but the really early diagnosis of internal cancer is admittedly at present almost impossible, and as regards pulmonary tuberculosis the difficulty is that the disease is so insidious in its early stages that it is often well advanced before the patient comes under observation. Something might be done by the more general use of radiography, particularly in the case of young adults suffering from vague ill-health, but the practitioner has not always got the facilities for using this method, and its adoption on a large scale is going to be both difficult and costly. Or take the case of cardiovascular degeneration. Suppose a doctor discovers incipient hypertension in a patient, what is he to do about it? There is no specific treatment for hypertension, as we all know, and it is usually idle to advise the patient to lead a sheltered life, for he will reply that he has his living to earn. The same difficulty arises in many other chronic conditions, for it has to be remembered always in the matter of preventing and avoiding disease that only a certain price can be paid for health either by a community or by an individual. Beyond a certain point the game may not be worth the candle.

The objections to the attempt to produce what is called health-consciousness in the community are of another sort, and I have spoken of them on another occasion (Hutchison, 1934). Here it is sufficient to say that whilst the amount of benefit to health to be produced by such means is problematical, the danger of creating numbers of hypochondriacs is real. We must beware of preaching what Stevenson called the doctrine of " tin shoes and tepid milk " ; nor need I remind a Scottish audience that we are not told in the Shorter Catechism that man's chief end is to glorify *Health* and enjoy it for ever.

Curative Side of Medicine

If we turn now to consider the present aspect of the curative side of medical science we shall be struck with the fact that of its three great divisions—diagnosis, prognosis, and treatment—the first is by far the most advanced. It may be said, in fact, without much exaggeration that there is little room for improvement in modern diagnosis (always excepting the early detection of cancer) when all its resources are brought adequately to bear on a case of disease. On the other hand, it might be argued with some plausibility that diagnosis is now overdone, for " investigations " not only add greatly to the cost of illness, but by detecting trivial deviations from the normal they confuse the boundaries between health and disease, and often cause needless anxiety. They are bad, too, for the art of medicine, by encouraging students and practitioners to rely on expert " reports " of one sort or another instead of using their own powers of observation.

The second division of curative medicine, prognosis, is in the least satisfactory condition of the three. There are many reasons for this which cannot be considered now, but it is to be hoped that in the future more attention

will be given to this important and difficult subject, for the facts from which a real science of prognosis might be built up are to a large extent already in existence, only they are buried in the literature of medicine.

In the science and art of treatment, on the other hand, we can claim great advances. Certainly at no previous epoch, thanks to the discovery of new anaesthetics, analgesics, and hypnotics, has illness as a whole been less disagreeable for the patient than it is now. In recent years, also, we have scored some great therapeutic successes, notably over diabetes and pernicious anaemia, whilst in a great many other minor directions the attack on disease has made progress. Even surgery, which was supposed by many to have reached the limit of its possibilities, has shown by its brilliant work in thoracic and intracranial disease and in affections of the sympathetic system that it is still capable of adding to our therapeutic resources.

There has, however, been no great strategic advance in the science of treatment in recent times comparable to that made by the discovery of anaesthetics and antiseptics, nor does there seem to be any on the horizon, unless psychotherapy should prove to be such.

Meanwhile, what can we really do in the cure of what I have spoken of as the great killing diseases? Very little. Take that "Captain of the Men of Death"—pneumonia. Can we really do much more here than support Nature in the hope that the patient will recover? Or cancer; in spite of minor advances in its treatment, such as the use of radium and deep *x*-ray therapy, more than 60,000 persons die of it in this island every year. Even in the case of pulmonary tuberculosis we are told on high authority that treatment has not advanced in the last thirty years except in that comparatively small group of cases in which artificial collapse of the lung is possible.

And how little can we do for the degenerative diseases, for nephritis, and for most organic affections of the nervous system! Even in the cure of the conditions which cause invalidity rather than death we have not much to boast about. Can we cure the common cold or influenza? Can we really do much in that large miscellaneous group of affections labelled "rheumatic," which account for so much time off work? As regards some of the other common causes of ill-health it seems certain that psychological methods will play a greater part in treatment—even of organic disease—in the immediate future than has been the case hitherto, but psychotherapy, though it can restore patients to happiness and usefulness, cannot claim to be able to save or even to prolong life.

So few, in fact, are the diseases we can really cure that one is tempted to believe that if all doctors went on strike for a year the effect on the death rate would be inappreciable. That is not to say, of course, that doctors are of no use, but only that they are of use in a different way from what the public imagines. In most cases of illness the doctor is really a mental poultice; he is a source of comfort, confidence, and consolation to the patient and his friends; but if he is honest with himself he will admit that the number of patients who would have died but for his attendance is lamentably small.

If this be the present aspect of the curative side of medical science where are we to look for better things in future? To bacteriology? But bacteriotherapy has not lived up to its early promise when it first gave us antidiphtheritic serum, although the intensive study of virus diseases now going on may yet bear fruit. To chemistry? We badly need a chemical agent which should kill infecting agents without damaging the tissues, but the *therapia magna sterilisans* of which Ehrlich dreamt still remains a dream, although here again the recent discovery of prontosil encourages the hope that the dream may yet become a reality. To endocrinology, to which so many pin their faith? But the endocrines have hitherto been of more help to the pseudo-scientific quack than to scientific therapy, and, profoundly interesting and important though they are, it is difficult to believe that even a much more complete knowledge of their action than we are ever likely to reach would help us to do much against the diseases that really count.

Prophecy, however, is idle. That great advances will be made we may feel tolerably sure, although the popular opinion that for every disease there is a cure, if only we could find it, is certainly a delusion; but from whence new help will come it is impossible to say; it may quite well be from outside medicine and its ancillary sciences.

Reorientation of Medical Theory

No survey of the progress and present aspect of medical science would be complete which omitted to notice the change in the underlying doctrine of medicine, as distinct from the science of it, which has been gradually coming about since the beginning of the present century. Such a change although inconspicuous is important, for practice depends upon theory just as conduct depends upon one's philosophy of life. This reorientation of medical theory or perhaps, to speak more accurately, this reversion, with modifications, to an older doctrine, goes by the various names of Neo-Hippocratism, Individual Medicine, and Constitutional Medicine, of which the last is perhaps the best.

In Hippocratic times, as is well known, medicine was dominated by the theory of the humours, chief importance being attached to changes in the fluids of the body in the production of disease. It is not generally realized how long this doctrine held sway, but one finds traces of its influence well into the nineteenth century. Already, however, towards the end of the eighteenth century the counter-theory of solidism, of which Cullen was the chief exponent in this country, and which regarded changes in the solid tissues as lying at the root of all pathological processes, had been set up, and fifty years later the cellular theory of Virchow gave this way of looking at things a great impetus. As the result of it the pathological changes in organs attained major importance, and the effect on practical medicine was to lead to the classification of disease by organs and systems, and to make the localization of the disease the chief aim of the clinician. The art of diagnosis, in fact, came to consist in forecasting the changes which would be found after death—hence the satirical term "mortuary medicine" sometimes applied to it—and I remember that this way of looking at things was still prevalent when I was a student. Further, in the last quarter of the nineteenth century bacteriological theories attained great prominence, largely under the influence of Koch, and emphasis was laid upon infecting agents in the production of disease, the part played by the soil being to a great extent ignored.

Since the beginning of the present century there has been, as I have said, a gradual veering of opinion away from the rather narrow dogmas of the schools of morbid anatomy and bacteriology and towards a new outlook on the field of disease. This has been brought about by three factors, which in order of their appearance are: (1) the rise of biochemistry, (2) the discovery of the endocrines, (3) the striking advances in medical psychology, which we owe mainly to the genius of Freud. Hence has arisen what is now often called Constitutional Medicine.

Constitutional Medicine

The term "constitution" has, of course, long been familiar in medical literature, but the thing itself, being of the nature of an abstraction, is difficult to define. On no subject, indeed, has there been more loose thinking and writing, but we may perhaps best regard it as the total make-up of the individual, physical and mental, though that, of course, was not the meaning given to the term by the Greeks. Constitution in this sense is partly inborn, and so may be hereditary, although it must be remembered that every individual is really a new amalgam or experiment—and, in part, it is the effect of environmental influences. Nor is it to be regarded as a static condition; rather is it a state of flux, which varies to some extent from day to day and even from hour to hour.

Constitution as thus defined has three aspects or components: (1) The anatomical or morphological, the "order of architecture" as it has been called, to which the individual's body belongs. (2) The physiological or functional, the way in which his particular machine works. (3) The psychological, the intellectual and emotional peculiarities and reactions which he exhibits. These three components are closely interrelated and react upon one another so as to produce a trinity in unity, the chief integrating factors being the vegetative nervous system and the hormones acting through the blood.

That the constitutional doctrine is already influencing preventive medicine, although perhaps unconsciously, I have already indicated. Physical training is directed to building up the anatomical side or physique of the individual, and improved nutrition aims at a more vigorous and harmonious working of the machine as a whole, whilst industrial psychology is beginning to throw light upon the stresses and strains to which the psychological aspect of the constitution is subjected under modern conditions; but what bearing is the new doctrine likely to have on *curative* medicine in the future? Well, in the first place, it should at least save us from what has been described as the commonest fault of the prescriber—that of regarding all patients as alike. Man is not one, but "a diversity of creatures," and although all men may be born free they are certainly not all born equal. If this is so, it follows that there are few if any rules of health applicable to all individuals. We must remember the advice "Know thyself"; in other words, everyone must learn to manage his own machine so as to keep it in running order, and in helping him to do this there should be no one so useful as the family doctor, who in the old phrase "Knows the patient's constitution." It is the essence, too, of the constitutional doctrine that it recognizes that health is not a single static thing, but has many degrees, and varies even from hour to hour. In the majority of persons, it is true, the constitution is tolerably uniform and reasonably stable, but there are not a few in whom it departs so far from the mean in one or other of its aspects as to render the possessor of it liable to certain diseases. In other words, it produces a *diathesis*.

In the matter of diagnosis constitutional medicine teaches us to look for syndromes rather than for cut-and-dried diseases, the aim being to find out what is wrong with the working of the constitutional machine in any of its parts. It should therefore be specially helpful in those cases in which no precise diagnosis can be made.

As it is the essence of its doctrine to regard the body as one and indivisible, every part of which, through the integration of the blood, the vegetative nervous system, and the hormones, influences every other, constitutional medicine naturally looks for remote causes for localized effects. The fruits of this view are being seen in the growing recognition given in recent years to focal sepsis as a cause of disease and in the introduction of thyroidectomy for auricular fibrillation—even when not primarily of toxic origin—as well as in the surgery of the sympathetic system. In the matter of early diagnosis, to which I have already referred, it points to chemical changes in the body fluids and to alterations in the functional efficiency of viscera as the most hopeful line of advance. In questions of treatment it has redirected attention to the importance of the blood, and this has led to a renewed interest in blood-letting, which had fallen too much into disuse, to a great development of transfusion, and to the use of new methods such as protein-shock.

Last, and most important of all, constitutional medicine bids us never forget that man has a mind as well as a body, and that every disease, whether organic or not, has a psychological aspect. It might even be said with some truth that the greatest service which the constitutional doctrine has rendered to medicine in recent times is the emphasis which it lays upon the functional element in all disease and upon the necessity for treating it.

Conclusion

Such is a very inadequate sketch of the doctrine which in all likelihood will chiefly influence the development of medicine in the immediate future. In conclusion, I am conscious that throughout this lecture I have taken what some may regard as too sober a view of the present aspect and prospects of medical science. I believe, however, that such an outlook is salutary, for we hear too much of the triumphs of medicine and too little of its failures; too much of the rosy prospects in store for it and too little of the difficulties to be overcome. It is surely better to face the facts without illusions, for "things are what they are and their consequences will be what they will be. Why, then, should we seek to be deceived?"

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Mont R. Reid (*New Engl. J. Med.*, October 22, 1936, p. 753) gives particulars of the fundamental principles of wound healing. The first essential is rest after the wound has been gently cleansed by means of sterile salt solution: compound fractures of the extremities to which plaster dressings are applied heal quickly. Another important factor in the healing of wounds is an adequate blood supply. The careful spacing of skin sutures is necessary so that a moist dressing will relieve tension by permitting the oozing of serum and blood during the period of swelling or oedema in the wound. Ideal haemostasis is also invaluable, as a haematoma delays healing and increases the danger of infection and suppuration. The prevention of infection should not be by means of germicides, since these injure the tissues. Granulation tissue is essential to the healing of every wound and it should be protected from trauma and bleeding. Tissue growth is obviously of great importance. Emphasis is laid on the necessity of treating infected wounds by conservative methods whenever possible, although if suppuration occurs some form of external drainage or excision may become necessary to avoid the damage of tension, accumulated toxins, and the spreading of infection. In cases of granulating wounds where secondary closure may be desired, intensive bactericidal therapy with Dakin's solution until the wound is macroscopically free of necrosis and all but a minor degree of bacterial contamination is the best course to follow.

AUTOGENOUS URINARY PROTEOSE IN ASTHMA AND OTHER ALLERGIC CONDITIONS *

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In 1930 Oriel and Barber published an account of a substance, "proteose," which they stated is excreted in the urine of allergic patients during attacks and contains the specific antigen to which the patient is sensitive. This "proteose" can be extracted from the urine with ether, but its precise chemical nature is not as yet known. Oriel states that it contains amino-acids, histidine, arginine, etc., and will give a positive test for carbohydrates and for protein. Boyd (1931) suggests that it is a serum albumin contaminated with a mucoid. Oriel and Barber (1930) think that the "proteose" is produced by a damaged liver and excreted in the urine. "Proteose" has also been found in the urine of normal people and in that of allergic patients between their attacks, but Oriel claims that the amount is greater during allergic paroxysms. Murray Lyon, Percival, and Stewart (1932) and Tuft and Brodsky (1932–3) support this claim, but Burgess (1933) and Vaughan (1932–3) disagree. Oriel (1933) further states that there are chemical differences in the proteose excreted by normal and asthmatic persons. He found that the latter contains three fractions, which can be precipitated with acetic acid, trichloracetic acid, and absolute alcohol, while proteose in normal subjects contains only the trichloracetic acid fraction.

Review of the Literature

Oriel and Barber (1930) state that 0.025 c.cm. autogenous proteose when injected intradermally will produce a positive reaction—that is, a wheal and erythema—in a sensitive patient. There has been much controversy as to the specificity of this proteose skin reaction. Oriel (1932) subsequently put forward the following claims: "(1) That the substance (proteose) isolated from the urine of an allergic patient during an attack would in a suitable dilution give a positive intradermal test in the patient's own skin. (2) That proteose from a normal person will not give positive tests on his skin under the same conditions. (3) That a distinction can be drawn between cases of asthma—that is, that the proteose substance from a patient with multiple sensitizations gives positive skin tests with asthmatics who have been demonstrated to have similar sensitization, and not with asthmatics who have not been so sensitized. (4) It is not claimed that urinary proteose is specific to the individual."

Conybeare (1931) and others have reported positive skin reactions with urinary proteose. Conybeare (1931) tested seventy asthmatic patients with (1) proteose from an active case of hay fever, and (2) proteose from an asthma patient not sensitive to pollen. His results showed that 69 per cent. of pollen-sensitive cases gave positive reactions to hay fever patients' proteose only and 17 per cent. gave positive reactions to both. In non-sensitive cases 76 per cent. gave no positive reaction to either, 12 per cent. to hay fever proteose only, 8 per cent. to both, and 4 per cent. to proteose from the non-sensitive asthma patient. In non-allergic cases no reactions at all were obtained. Darley and Whitehead (1931) record positive skin reactions with proteose prepared from two asthmatics during an attack and negative reactions in three cases when the proteose was prepared during the asymptomatic period. They also found positive reactions in three out of five cases of acute arthritis and two out of three cases of serum sickness. Negative results were obtained in one case of generalized eczema, one case of urticaria, and one case of erythema multiforme. Yeoman, Sinclair Miller, Rutherford, and Wesley-Smith (1932) state that they have obtained positive intradermal reactions in 50 per cent. of cases of rheumatoid arthritis. Bruce Pearson (1933), working at Guy's Hospital, compared the skin reactions of fifty asthmatics with those of fifty normal people. He found that with a 1 in 1,000 dilution of proteose 54 per cent. of asthmatics reacted to their own proteose, in contrast to 6 per cent. of normal controls. He also found that 60 per cent. of asthmatics gave a positive reaction when tested with other asthmatic patients' proteose, in contrast to 40 per cent. positive reactions in controls tested with asthmatic proteose. He further showed that in protein-sensitive asthmatics 83 per cent. reacted to their own proteose and 60 per cent. reacted to normal proteose. In non-protein-sensitive asthmatics 15 per cent. reacted to their own proteose and none reacted to proteose from normal persons. Among his conclusions Bruce Pearson states that there is no evidence of individual specificity, that proteose is not entirely group specific, and that asthmatic proteose is relatively toxic as judged by skin reactions. Burgess (1933) found that 16 per cent. of normal people and 69 per cent. of allergic skin patients reacted to their own proteose. Eichenlaub (1933) found positive skin reactions in three allergic skin cases.

Freeman (1932) and others do not regard the skin reaction obtained with urinary proteose as specific, but consider it is due to the toxic action of the substance. Freeman compared the skin reactions produced by (1) pollen, (2) proteose from a hay fever patient (supplied by Oriel), and (3) control proteose from a normal case. Pollen gave typical skin reactions (wheal and erythema) in hay fever, but the hay fever proteose gave variable reactions in hay fever patients and in controls. He also prepared samples of proteose from five allergic patients and tested them on (1) the subjects from whom they were prepared, (2) other allergic patients, and (3) normal persons. The same type of toxic reaction was obtained in all cases. Freeman concludes that Oriel's proteose, no matter whence obtained or on whom tested, shows a fairly constant toxic reaction within a few minutes of injection into the skin and that there is no evidence of any specific skin reaction.

Murray Lyon, Percival, and Stewart (1932) prepared samples of urinary proteose from twenty-five allergic cases and found that twenty-one of these gave reactions both in normal persons, in the patients who supplied the proteose, and in other patients with various skin conditions. Four samples did not give any reaction at all. They conclude that the peculiarity of urinary proteose with regard to the skin seems to lie not in its specificity in certain conditions but in its property of producing a local inflammatory reaction. Steel (1932) found that eleven out of twenty-seven asthmatic patients reacted to their own proteose. He also found that asthmatics who did not react to their own proteose would quite often react to that from another asthmatic. Minchin (1932) pre-

* Work undertaken during tenure of the Samuels Memorial Scholarship, University of Liverpool.

pared proteose in ten cases of epilepsy and did not obtain any positive skin reactions. Van Leeuwen (1932) tested the proteoses prepared from twenty-four cases and found that they sometimes produced positive reactions in asthmatics, but not necessarily in the asthmatics from whom the proteose was prepared. He concluded that the reaction was therefore non-specific. Aldred-Brown and Munro (1932) did not obtain any positive reaction with proteose prepared from fifty cases of acute rheumatoid arthritis. Cormia (1933), investigating allergic skin patients, found a positive skin reaction in both allergic and non-allergic patients, which he suggests is due to local skin irritation. Cornbleet and Kaplan (1934), in a chemical and biological study, obtained an erythematous skin reaction with proteose, but no reaction occurred when the proteose was first dialysed. They suggest that the skin reaction is produced by salts and other irritants.

Therapeutic Application of Proteose

Urinary "proteose" has been used in the treatment of a variety of allergic skin conditions (eczema, urticaria, etc.), asthma, hay fever, epilepsy, and rheumatoid arthritis.

ALLERGIC SKIN DISEASES

Oriel and Barber (1930) obtained a "cure" in sixteen out of nineteen cases of urticaria and in nine out of thirteen cases of simple prurigo. Benefit was noted in five out of fourteen cases of Besnier's prurigo. These authors also stated that proteose gives good results in dermatitis herpetiformis, but confess to disappointing results in psoriasis. Burgess (1933) reported that five out of eight cases of chronic eczema cleared up completely, three out of eight cases of chronic urticaria were "cured," and a further three cases were much improved. Temporary improvement was obtained in four cases of Besnier's prurigo, and of five cases of psoriasis one cleared up completely. One case of dermatitis herpetiformis cleared up, but subsequently relapsed. Burgess regards these results as satisfactory for eczema and urticaria.

Eichenlaub (1933) recorded marked improvement in four cases of eczema out of eleven. One of two cases of psoriasis was cured. He did not obtain any satisfactory results in neurodermia, dermatitis hepetiformis, or chronic urticaria. Eichenlaub (1934) subsequently stated that all the patients in whom he had reported favourable results had since relapsed and failed to respond to further treatment. Cormia (1933) had unsatisfactory results in eight cases of allergic skin conditions. Templeton (1933) also records poor results in fifteen cases of various allergic skin conditions. Cornbleet and Kaplan (1934) observed no therapeutic benefit after treating fourteen cases of eczema with proteose.

ASTHMA

Oriel (1933) treated seventy cases of asthma with proteose. In analysing his results he divided the cases into two groups: (1) protein-sensitive cases (forty-four patients), and (2) non-protein-sensitive cases (twenty-six patients). A summary of Oriel's results is shown in Table I.

TABLE I.—*Showing Oriel's Results in Seventy Cases of Asthma Treated with Urinary Proteose*

Type	No.	"Free"	Much Improved	Improved	Unchanged
Protein-sensitive asthmatics	44	10 (23%)	20 (46%)	10 (23%)	4 (8%)
Non-protein-sensitive asthmatics	26	2 (8%)	5 (19%)	5 (19%)	14 (54%)

His criteria of improvement are as follows: (1) "Free"—symptoms practically absent for six months. (2) Much improved—attacks 75 per cent. less. (3) Improved—attacks 50 per cent. less. (4) Unimproved. Oriel states that 70 per cent. of protein-sensitive asthmatics have a chance of "marked amelioration" compared with 27 per cent. of the non-protein-sensitive asthmatics. It should be noted that of the seventy cases twelve (that is, 17 per cent.) became "free" for six months. Darley and Whitehead (1931) reported improvement in six out of nine cases of asthma. Trasoff and Meranze (1932–3) state that they had unsatisfactory results in eight cases of asthma.

HAY FEVER

Darley and Whitehead (1932) found that six out of twelve cases of hay fever obtained complete relief. Watson (1933) reported improvement in seven cases of hay fever.

RHEUMATOID ARTHRITIS

Barber and Oriel, in one of their original communications, stated that when proteose was given to patients with psoriasis associated with rheumatoid arthritis, although the psoriasis did not improve, the joint condition was ameliorated. Aldred-Brown and Munro (1932) treated fifty cases of rheumatoid arthritis with proteose, and recorded apparent success in one case only. Yeoman, Sinclair Miller, Rutherford, and Wesley-Smith (1932), in a letter to the *Lancet* following Aldred-Brown's paper, stated that they had obtained satisfactory results using proteose in the treatment of rheumatoid arthritis.

EPILEPSY

Haviland Minchin (1932) treated seven cases of epilepsy with autogenous proteose. Four cases showed no change, one was slightly better for three weeks and then relapsed, one case formerly having four to five fits a month became free for two months and subsequently relapsed, one case having major fits began having minor fits.

Results in Present Series

In our investigation it was decided primarily to assess the therapeutic effects of proteose. It was realized that even if proteose was not specific in its action, as claimed by Oriel, some therapeutic benefit might be obtained as often happens with non-specific injections. Proteose was administered to a series of fifty-eight patients, composed of forty-eight cases of asthma and ten cases of various allergic skin conditions. Autogenous proteose was prepared from the urine in every case.

Oriel and Barber suggested minute doses. In their original paper they stated that injections of 0.025 c.cm. will often cause a severe reaction. Subsequently Oriel suggested an initial dose of 0.1 c.cm. of a dilution ten times weaker than the lowest dilution of autogenous urinary proteose which gives a specific skin test, the injection to increase by 0.1 c.cm. at a time, until there is a reaction (increase of symptoms or malaise), or until the condition shows definite signs of improvement. We were never able to confirm the presence of a specific skin reaction, the only skin reaction produced being a small erythematous zone such as might be produced by the intracutaneous injection of any toxic substance. We thus had to formulate our own method of dosage. The routine doses given in our series were as follows:

Weekly intramuscular injections of 1/2 c.cm. followed by 1 c.cm. of 1 in 1,000,000, 1 in 100,000, 1 in 10,000, and 1 in 1,000 dilutions. These were followed by two further injections of 1.5 c.cm. and 2 c.cm. of the 1 in 1,000 dilution. The patients thus received ten weekly injections. In only

two cases did the initial dose of 1/2 c.cm. of 1 in 1,000,000 dilution produce any general reaction (precipitation of severe asthmatic attacks the night following the injections), and in these cases smaller doses were subsequently given which, however, also produced reactions, but of a milder character. It was further found that no general or local reaction was produced by the injection of large doses of proteose, the majority of our patients having received 2 c.cm. of 1 in 1,000 proteose without any ill effects.

The assessing of the results of treatment in asthma is notoriously very difficult. Full consideration must be given to the fact that asthmatics often improve with any type of treatment for a varying interval, possibly due to psychological causes. Thus, for example, Conybeare and Witts (1935), using injections of normal saline (in addition to ephedrine and specific allergen avoidance) report: "At the end of two months' treatment 15 per cent. of the whole group are 'much improved,' 31 per cent. are 'slightly improved,' and 54 per cent. are 'not improved.' In other words, approximately half the patients have improved."

In the presentation of these results the cases have been divided into four groups: (*a*) Much improved—those showing benefit for twelve months or over; (*b*) improved—benefit for three to twelve months; (*c*) slightly improved—benefit up to three months; (*d*) the remainder. The length of history, together with the severity and frequency of attacks, before and after treatment, were carefully considered in each case before placing it in one or other of these groups. The results are shown in Table II, from which it will be seen that 23 per cent. of the cases were markedly improved for twelve months or more.

TABLE II.—*Showing Results of Proteose Therapy in Present Series*

No. of Cases of Asthma	Marked Improvement	Improvement	Slight Improvement	Unchanged
48	11 (23 %)	14 (29 %)	9 (19 %)	14 (29 %)

An attempt was made to ascertain if there were any special factors in the successful cases which would account for their marked response to the proteose treatment. The eleven cases in the first group were therefore compared with the fourteen cases in which no improvement occurred. Age, sex, family history of allergy, history of previous chest disease, duration, special precipitating factors, sputum, eosinophilia, presence or absence of nose and throat disease, were compared in the two groups. It was found that the incidence of all these factors was of the same order in both groups. No evidence was found to suggest that the cases with marked improvement contained a greater number of protein-sensitive cases than did the group with no improvement. It should also be noted that the cases which did well did not give any specific skin reactions. We previously mentioned that two cases gave marked general reactions following the initial injections of proteose. After receiving smaller doses of proteose these patients showed considerable improvement, remaining free from attacks for over twelve months. These two cases were the most dramatic "cures" of our series, but we feel that in any series of asthmatics this may occasionally occur.

The dosage of proteose employed in allergic skin conditions was similar to that given in the asthma series. Six cases of urticaria were treated. One case became free from attacks, one case became free for six months, two were free for three months, and the remaining two showed no benefit. One of two cases of chronic eczema improved for three months, the other case did not improve. One case of dermatitis herpetiformis showed marked improvement, and one case of plant dermatitis improved for six months, but subsequently relapsed.

Proteose Compared with Peptone

Desensitization by intramuscular injections of peptone is another line of treatment which has been used in this clinic. The peptone course consisted of a series of graded doses of 7½ per cent. peptone (Martindale), starting with 0.3 c.cm. and increasing by increments of 0.2 c.cm. to 1.3 c.cm. Four doses of 1.5 c.cm. were then given. A continuation course of three doses of 2 c.cm. and three of 2.5 c.cm. was subsequently administered. The injections were given at weekly intervals. We have analysed a series of cases in which peptone had been administered, and contrasted the results of this treatment with those obtained in other cases on proteose medication. The results have been set out in three groups, as shown in Table III.

TABLE III.—*Comparing Results of Proteose and Peptone Therapy in the Present Series of Asthma Cases*

	Treatment	Marked Improvement	Improved	Slight Improvement	Unchanged
Group A, 26 Cases	(1) Proteose (2) Peptone	2 8	11 4	4 9	9 5
Group B, 55 Cases	Peptone only	9 (16 %)	11 (20 %)	15 (27 %)	20 (37 %)
Group C, 81 Cases	All cases receiving peptone	17 (21 %)	15 (18 %)	24 (30 %)	25 (31 %)

Group A consists of twenty-six patients who had previously received proteose with no improvement, or who had relapsed after some initial benefit, and were subsequently given a course of peptone. This group contains a number of patients who did better on peptone than on proteose. Of the nine patients in this group who received no benefit at all from proteose three received benefit up to three months with peptone and two were markedly improved for over twelve months. Group B cases consist of fifty-five asthmatics who received peptone alone, and Group C contains all the eighty-one patients receiving peptone. Of Group C (Table III) cases 21 per cent. were markedly improved after peptone, as compared with 23 per cent. in the series of proteose patients (Table II). Statistically, if one can use statistics in assessing the cure of asthma, these results would indicate that proteose and peptone have both about the same influence in the treatment of asthma, and that the results of treatment with autogenous proteose appear to be no better than those obtained with a non-specific agent. The former method, too, has the following drawbacks:

1. Treatment cannot be begun until the patient has had a further attack of asthma, the urine has been collected, and the proteose prepared.

2. The preparation of proteose, because of its individual nature, is rather expensive and laborious.

Treatment by non-specific means—for example, peptone—on the other hand can be begun at any time, no laboratory preparation is necessary, the same degree of therapeutic value is obtained, and the treatment is relatively cheap.

Conclusions

1. Investigations here described, together with a study of the literature, tend to confirm the view that the zone of erythema obtained at the site of intradermal injection of urinary proteose is probably nothing more than a local toxic reaction and is not in any way specific.

2. The therapeutic benefit obtained with injections of autogenous urinary proteose in cases of asthma is about the same as that obtained with peptone. Any specificity which may be claimed for the former method does not outweigh the many advantages of a simpler and more general form of desensitization such as can be obtained with peptone.

3. The therapeutic results obtained in cases of urticaria are encouraging, and of sufficient interest in our opinion to warrant further investigation.

In conclusion, we wish to record our sincere thanks to Dr. W. Howel Evans for preparing the proteose in each case, and to Dr. R. Kemp for his help in supervising the peptone injections.

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THE VALUE OF OLEOTHORAX IN OBLITERATIVE PLEURISY

BY

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The ingenious idea of Bernou of employing large quantities of oil in the pleural cavity was, unfortunately, overdone and exploited in certain quarters with an uncritical enthusiasm, with the result that opinion veered the other way until the method appears to have become almost entirely discounted. This is to be regretted, for though a minor procedure, it occupies a position of great importance, used strictly within its proper indications and limitations. If obliterative pleurisy is taking place with dangerous prematurity in the course of artificial pneumothorax, oil in the pleural cavity is the only thing that will keep the pleural layers apart, and so save the patient from a thoracoplasty. As the obliteration of the pleura proceeds so will the oil be driven to the upper zone of the chest, where collapse is most commonly wanted. It will be held there under considerable pressure, and, contrary to what Mr. Morriston Davies wrote in an excellent contribution to the *Americal Journal of Thoracic Surgery* in December, 1935, I believe that it is the high-pressure oleothorax that is of the greatest value.

The division of adhesions in cases of incomplete pneumothorax may itself start the process of obliterative pleurisy. Then, although the intervention may have given complete rest to the lung, closed all cavitities, abolished all symptoms, and led to the complete disappearance of tubercle bacilli, the inexorable and irresistible march of the pleural symphysis may, as it reaches the higher zones of the thorax, reopen the cavities, tear apart quiescent and healing areas, and so start the disease process all over again.

If it is evident that the pleural obliteration is progressive, or if it is possible that the premature re-expansion of the lung will reactivate the disease, something must be done to prevent it. There are only two possible courses: one is thoracoplasty, and the other is to establish an oleothorax. Of the two oleothorax is obviously to be preferred.

Oil is incompressible and practically unabsorbable, or absorbed only over a very long period. It is driven to the upper part of the thorax, where it is most usually wanted, and there it will remain unchanged and unnoticed by the patient for many years.

The objection raised is that it may rupture into the lung. I believe that this is putting the point the wrong way round. The lung, if the seat of active tuberculosis, may rupture into the oil, just as a spontaneous pneumothorax may occur with or without an artificial pneumothorax, with or without pleural fluid, and with or without an oleothorax. At the same time it cannot be denied that oil under considerable pressure over a softened area of diseased lung could burst through. If this happens it is an unpleasant and sometimes a grave event. With a thickened pleura, however, which usually exists under the conditions for which I advocate oleothorax, I believe this accident to be rare; moreover, it is a risk most patients would be prepared to take if they understood the alternative. At the very first suspicion of oil in the expectoration the oil in the pleura must, of course, be immediately replaced by air.

Conditions Necessary for the Establishment of a Successful Oleothorax

There are two essentials in my opinion: a rigid mediastinum, and a pleural cavity of strictly limited capacity. The first is obvious; the second perhaps not.

In the early days I tried therapeutic oleothorax as a substitute for pneumothorax, and I found that three pints of oil would not half fill the hemithorax. To maintain an adequate lung collapse by oil with a non-rigid mediastinum and a completely free pleura would take, in an average case, probably six to eight pints, and this would seem highly undesirable. With a mobile mediastinum no amount of oil would be effective without producing, simultaneously, gross mediastinal displacement. Hence it can be seen that commencing or, better, partially developed obliterative pleurisy provides the ideal conditions for oleothorax. The mediastinum is fixed, the pleura is probably thickened and unyielding; the capacity of the pleura is limited and progressively becoming smaller.

Nevertheless I have cases where an oleothorax was performed as a substitute for pneumothorax. One patient was a child, aged 7, whose case I published in the *British Medical Journal* (June 18th, 1932). There was acute phthisis and extensive cavity formation. Artificial pneumothorax treatment was given, and a huge central cavity would not close because of adhesions. These were divided and the cavity closed. The child so dreaded the refills of air that I decided to perform an oleothorax. This was done in 1931, and the child to-day is perfectly well, living the normal life of a schoolgirl, with the oil still present. It has apparently become encysted from apex to base. She has never had any recurrence of symptoms.

Technique

Pure sterile olive oil is used. There is no need for the addition of gomenol, which serves no useful purpose, and merely acts in many cases as an irritant. Even olive oil may produce a pleural reaction. It is necessary, therefore, to use pilot doses, at first 5 c.cm., then, if no reaction, say, 50 c.cm., then 100 c.cm., then 500 c.cm. If there is still no reaction the total requisite amount can be given. It can be introduced gradually as each refill is due, or it can be given at one time if a hypodermic needle is inserted in the first or second intercostal space anteriorly, with the patient lying on his back, and the oil injected, say, in the mid or anterior axillary line, and continued until it runs out of the hypodermic needle above.

Illustrative Cases

CASE I

In July, 1925, a man aged 25 came under my observation with diabetes and pulmonary tuberculosis. The diabetes was so severe that dieting and 60 units of insulin hardly controlled it. There was extensive tuberculosis in the left lung of a rapidly spreading bronchopneumonic type. Tubercle bacilli were present in the sputum in large numbers. The temperature was high and the patient was emaciated. Artificial pneumothorax was induced by Dr. F. H. Young. The temperature gradually fell to normal, and the general condition rapidly improved: the cough, expectoration, and tubercle bacilli disappeared. The insulin was reduced from 60 to 15 units.

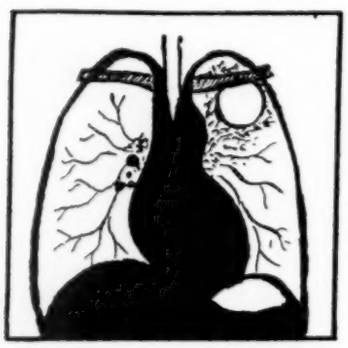

FIG. 1.—Acute pulmonary tuberculosis with extensive excavation, October 4th, 1934.

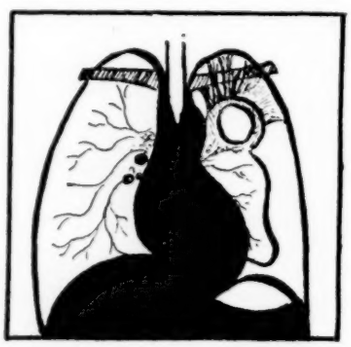

FIG. 2.—Artificial pneumothorax. Cavity held open by numerous adhesions before division by single puncture thoracoscope, November 22nd, 1934.

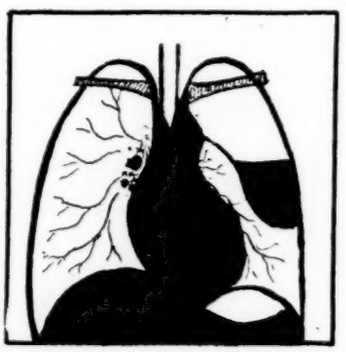

FIG. 3.—The lung freed, but obliterative pleurisy and some fluid, July 17th, 1935.

After a time a large effusion appeared on the left side. This was replaced twice, once by air and once by oxygen, but again recurred. Fearing the progress of obliterative pleurisy, which was already beginning, I decided to replace the fluid by oil in March, 1926; 600 c.cm. of 5 per cent. gomenolized olive oil were injected into the pleural cavity, At first refills of air were given above the oil. In March, 1927, 250 c.cm. of oil were injected; on February 7th, 1928, 360 c.cm., and on July 21st, 390 c.cm. The air of the pneumothorax was gradually absorbed; the oil was pushed by the pressure of the contracting pleural space to the upper zones of the chest. The last two fills had to be given under great pressure, the piston of the syringe being driven forcibly back.

FIG. 4.—Oleothorax, July 15th, 1936.

The patient remained in good health, doing full work, and gained 2 st. in weight. In October, 1928, he was very well, and weighed 11 st.; there was no sugar in the urine, and the blood-sugar figure was 166. In March, 1929, he had pneumonia. In April, 1929, his general condition was very good; there were no symptoms and no tubercle bacilli were present, and his weight was 11 st. 8 lb. In May, 1931, he had a sudden acute diabetic coma, and died.

The post-mortem examination showed a well-compressed lung, over which the oil had remained perfectly clear. The tuberculous process was completely healed, leaving a calcareous area in the left lower lobe. The specimen is in the Victoria Park Hospital Museum.

CASE II

A married woman aged 24 first came under my care in September, 1934, with active pulmonary tuberculosis. She was wasted, and had high fever; there were night sweats, haemoptysis, tubercle bacilli in large numbers, much sputum, and a hectic flush. Nearly the whole of the left upper lobe was excavated by a huge cavity.

An artificial pneumothorax was induced on October 5th, 1934. There were numerous adhesions holding the cavity open; these were all divided in three operations, by the single cannula thoracoscope, each operation taking about an hour and a half. The lung was completely freed and the cavity closed; the patient made a remarkable recovery, gaining 4 st. in weight. Fluid, however, appeared after the last thoracoscopy, and very soon obliterative pleurisy commenced. It rapidly advanced until the lung became adherent about a third of the way up the chest wall. Refills were given in progressively lesser quantities and higher pressures, but, even so, this did not serve to prevent the progress of the pleural obliteration, and in a short time tubercle bacilli reappeared in the sputum.

Oleothorax was therefore decided upon. On December 9th, 1935, the patient was given 5 c.cm. of sterile olive oil; there was no reaction. On December 12th she was given 140 c.cm., and on the 16th 420 c.cm. without any reaction. On December 31st she was given 40 c.cm., not under undue pressure, but oil just slightly oozed out of the needle at the end of the injection. On January 21st, 1936, she received 20 c.cm.; on March 3rd 50 c.cm. and some air; and on May 13th a small injection of air, the final pressures being +14 and +23. On June 10th 100 c.cm. of oil and on August 13th 80 c.cm. of oil were given, making a total of 855 c.cm.

The patient is now in perfect health, with no symptoms and no tubercle bacilli. Various stages of this case are illustrated in the diagrams.

Conclusion

The true indication for oleothorax is obliterative pleurisy occurring with dangerous prematurity in the course of artificial pneumothorax treatment.

INFECTIVE HEPATIC JAUNDICE*

BY

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During the last few years sporadic cases of the infective hepatic jaundice type have been common in South Derbyshire, and several epidemics have been described in this or adjacent districts. Montford (1934) recorded forty-five cases in Castle Donington (population 2,674) in 1933, only two of which were in adults. Frazer (1935) recorded jaundice in twenty-five children all attending the same day school in Newhall. Richards (1933) described an epidemic among adults attending the Derbyshire Royal Infirmary for anti-syphilitic treatment, of which there were 120 cases. It is true that all except one had received, at some time, an arsenobenzol compound, but the epidemic was due to close contact in the waiting-room, and died out when this was remedied.

If we exclude spirochaetal jaundice and discuss simple infectious jaundice we have a subject suitable for a clinical society, because any one of us may have the opportunity of studying the natural history of the condition more fully and the chance to add something to medical knowledge. It was Pasteur who said, "In the scientific world chance only comes to the mind that is prepared."

Nomenclature

Our subject will include: (1) Catarrhal jaundice proper in epidemic and sporadic form; this is essentially a gastritis passing on to the duodenum, whence inflammation spreads up the bile duct, leading to obstructive jaundice. (2) Infective hepatic jaundice, also occurring in epidemic and sporadic form, which is an acute hepatitis, giving rise to toxic jaundice. From this second group arise some cases of acute or subacute necrosis of the liver, which is a better-defined name than acute yellow atrophy or the clinical label icterus gravis.

Much has been written under the title epidemic catarrhal jaundice since Cockayne (1912) distinguished the milder type of epidemic jaundice from that due to the spirochaete. In recent years, although the name catarrhal has been retained, the trend of opinion and much of the evidence has been toward a mild toxic jaundice as the explanation of the cases. For this disease infective hepatic jaundice is the name of choice. Hurst and Simpson (1934) have published convincing evidence that catarrhal jaundice and infective hepatic jaundice are two distinct diseases which have been confused. We may return to this under the appropriate headings below when discussing the features about which further clinical observation is needed. A paper recently published, entitled "Non-spirochaetal Infectious Jaundice," illustrates the difficulties of nomenclature. It is probable, however, that in the future we shall group most of the cases, both epidemic and sporadic, under the title of infective hepatic jaundice, with an occasional group attributable to the rarer condition catarrhal jaundice.

Some Features of the Epidemics

In the Wensleydale epidemic, reported by Pickles (1930), there were 250 cases of jaundice in a population of 5,700 people. The majority of those infected were elementary school children, and close contact in school was a definite source of infection. There were no fatal cases. A few children had pain suggesting some acute abdominal lesion. The incubation period was twenty-five to thirty-five days and the period of infectivity short.

Glover and Wilson (1931) observed an epidemic in a country town of 6,000 people in 1930. There were two or three hundred cases in the town. In one family jaundice began in four children on the same day. There were two large boarding schools in the town. In a girls' school with 250 boarders there was no jaundice, although one of the teachers was affected during the holidays. In a boys' school with 400 boarders there were ninety-five cases of jaundice. It was thought that infection was spread by the nasopharynx, and as evidence of close contact we have seven cases of jaundice out of nine boys in one dormitory and five out of nine in another.

Bashford (1934) recorded forty-eight cases of jaundice during the months of June and July, 1934, in workers in the General Post Office in London. In one building, where there were 1,900 workers, there occurred forty-three of these cases, but they were spread over four different rooms. This would suggest that the condition is highly infectious, but that the majority of adults may have acquired an immunity. None of them carried infection to their own homes, where they remained during the illness, and all recovered.

A study of the epidemics described will show that they tend to occur in rural districts and in institutions. It is most infectious to children, is the result of close contact, and the stage actually infectious is short. The incubation period is a long one, probably between three and five weeks.

Clinical Features of Infective Hepatic Jaundice

The onset is fairly sudden, with perhaps one attack of vomiting; there is an early rise of temperature, with jaundice usually appearing next day. Malaise is pronounced. The liver is enlarged, and the spleen appears to vary in size in different epidemics. There is some bile in the stools and the van den Bergh reaction is biphasic, being characteristic of a toxic condition. In a number of cases there is only jaundice, with the other symptoms reduced to a minimum. Exceptionally there may be severe abdominal pain. A few cases have a good deal of vomiting. In one or two epidemics the illness has begun with a sore throat. The jaundice lasts a variable time, usually one to three weeks. Convalescence is slow.

Prognosis in Infective Hepatic Jaundice

The great majority of the patients get perfectly well. Some liver efficiency tests carried out by American observers (Soffer and Paulson, 1934) suggest that frequently the organ does not recover fully. The observations, however, are few and the tests themselves not of proven value. The clinical evidence is all in favour of complete recovery in most cases, although a follow-up over several years by those who have observed epidemics will be the most valuable evidence. There is no doubt that convalescence may be very tedious. A colleague of mine in a neighbouring country town, where there has been an epidemic, tells me of an adult who felt miserably ill for three months after what appeared to be quite a mild attack.

Though death is an exceptional event it is necessary to treat these apparently simple cases of jaundice with respect, because there may be much damage to liver tissue without symptoms arising to give warning of the fact. This latency of symptoms in hepatitis is borne out by the experimental evidence of giving sublethal doses of chemical toxins to animals.

* From an address to a combined meeting of the Nottingham and Derby Medical Societies on April 21st, 1936.

As an example in clinical medicine I have observed the following case.

A boy aged 8 years was admitted to the Derbyshire Royal Infirmary. Fourteen days previously he became feverish, with loss of appetite, and slight jaundice developed. The day of admission, without any warning, he became very ill, was admitted delirious, with vomiting, muscular spasms, and incontinence of urine and faeces. The pupils were widely dilated; jaundice became intense, the liver was enlarged, but the spleen not palpable. The van den Bergh reaction gave a biphasic reading. He was treated with insulin and glucose, and after being very ill for two or three days recovered completely. Eighteen months afterwards he was reported as having remained in good health.

This would appear to be a clear case of necrosis of the liver as the result of infective hepatic jaundice, which stopped just short of a fatal issue. The sudden onset of the serious symptoms was dramatic.

Since putting these notes together a fatal case in a child has been admitted to the Derbyshire Royal Infirmary. The clinical history was similar. He died soon after admission. There was no evidence of duodenitis or inflammation of the bile ducts, but the liver cells were necrosed.

Relation to Necrosis of the Liver

These two cases may be accepted as necrosis of the liver cells arising in infective hepatic jaundice and giving rise to serious symptoms.

It is reasonable to conclude that acute hepatitis is present in all cases of infective hepatic jaundice. Gaskell (1933) had the opportunity of observing this post mortem in a child who died from secondary haemorrhage three days after tonsillectomy, and two days after jaundice with pyrexia had developed. Findlay and Dunlop (1932) recorded "a fatal case of acute necrosis of the liver associated with epidemic catarrhal jaundice." They refer to other fatal cases recorded, and summarize the evidence from Sweden of Wallgren and Bergstrand, who recorded that from 1914 to 1925 there were only two cases per year of acute necrosis of the liver in Stockholm. In 1926 and 1927 epidemic jaundice was common. In the latter year there were forty-two cases of acute necrosis of the liver. Most of these were adults, suggesting that the power of tissue regeneration was less than in childhood.

If infective hepatic jaundice is due to a virus, which sets up acute hepatitis; if it is highly infectious in children, but well resisted by them; if most adults have acquired immunity, but those who become infected have a liver less capable of regeneration than the child, the natural history of epidemic and sporadic cases may be explained.

Catarrhal Jaundice

Hurst and Simpson have discussed the features which distinguish true catarrhal jaundice from infective hepatic jaundice. Post-mortem evidence of a bile duct obstructed by catarrhal inflammation is hard to come by, but there are well-authenticated examples. The early symptoms of gastritis should be pronounced; and if this be the essential lesion, we should expect in an epidemic that a number of cases of gastritis without jaundice would be met with. There appears to be little evidence of this, but Hurst and Simpson record the observation of one doctor, who had under his care at the same time a brother and sister, the one with uncomplicated gastro-enteritis and the other with the same symptoms followed two days later by catarrhal jaundice.

I have observed two epidemics of simple jaundice in an institution. In the one case there was definite gastritis preceding the jaundice and the incubation period appeared to be seven or eight days. In the other epidemic, which was typical of infective hepatic jaundice, the incubation period was about twenty-five days.

On theoretical grounds the van den Bergh reaction should help in differentiation, by means of a direct positive result in catarrhal jaundice giving rise to obstructive jaundice, and by obtaining a biphasic reaction in toxic hepatitis. The readings, however, are not sufficiently convincing, and are probably of less value than the presence or absence of bile in the stools.

Summary

Simple epidemic jaundice is discussed with the conclusion that most cases labelled catarrhal jaundice are really due to an acute hepatitis and should be called infective hepatic jaundice. An isolated case may be regarded as a sporadic example of what is met with in epidemic form.

When opportunity arises to observe an epidemic it is suggested that further clinical observation is required with regard to the incubation period, which appears to be three or four weeks in the hepatitis cases and may be shorter in true catarrhal jaundice. In the latter condition in epidemic form we should like to obtain evidence of an infective gastritis which passed off without jaundice developing.

There is considerable evidence that infective hepatic jaundice may be a serious condition requiring careful treatment, with rest and glucose (with perhaps insulin) to protect the liver cells. In view of the doubtful value of our present liver efficiency tests there is need for a careful clinical study of the after-histories in those districts where epidemics have occurred.

There is recorded evidence of several children beginning the illness at the same time. Recently two medical officers have come under observation who both became ill within a day or two. This would suggest the possibility of a carrier, or more probably infection from an abortive unrecognized attack.

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M. A. Sisti (*Policlinico*, Sez. Prat., November 23, 1936, p. 2099), who records four illustrative cases in patients aged from 19 to 56, states that he obtained successful results by treating bronchial asthma by pneumoperitoneum when other methods had failed. The technique is the same as that used in the treatment of tuberculous enteritis. A puncture is made with a bevelled needle three fingerbreadths below and to the left of the umbilicus and oxygen is injected with an artificial pneumothorax apparatus. The quantity of gas introduced at a time varies from 250 to 350 c.cm.; refills should be given at first every two or four days, and later every eight or ten days. The duration of the treatment will depend on the clinical results. The method does not involve any risks. The patient has only to stay in bed in a supine position for two or three days with the pillows slightly raised to relieve the feeling of pain and dragging on the hypochondria and shoulders. He can then resume his ordinary occupation.

RECURRENT EXTRAGENITAL HAEMORRHAGES

BY

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To the occurrence at regular intervals of extragenital haemorrhages from one or other part of the body at or near the time of the menstrual period the name "vicarious menstruation" has been given. In the majority of the cases described in the literature such a designation is not strictly accurate as there is a lack of convincing evidence to show that the abnormal bleeding is, in reality, in the nature of a menstrual discharge. With a few exceptions they can merely be classified as cases showing recurrent extragenital haemorrhage with an indefinite relationship to the menstrual cycle. But, although the occurrence of true vicarious menstruation is so rare, the old name seems to have come to stay and is still handed down from one generation of students to another.

Two varieties of vicarious menstruation are described. In some instances the haemorrhage appears to take the place of the normal uterine menstrual loss, which is altogether absent. In other cases menstruation occurs, with in addition some form of extragenital bleeding. The former variety is known as substitutional while the latter is called supplementary menstrual haemorrhage.

Review of the Literature

The condition is a relatively rare one. "This extremely rare abnormality," says Bethel Solomons (1934), and Novak (1931) credits Lawson Tait with the remark, "I do not absolutely deny that there is any such thing as vicarious menstruation, but I do deny the propriety of examiners at the University of London, or anywhere else, asking the commonest cause of epistaxis and receiving the answer of vicarious menstruation with approval!" Novak (1931) quotes an extensive study of the literature made by Roth, who traced 225 cases since 1870. In his series the sources of the haemorrhages were: nose, 30 per cent.; nipples, stomach, mouth, and throat, 4 to 5 per cent.; skin and fistulae, 10 per cent.; lungs, 8 per cent.; bladder, eye, ear, intestines, and vagina, 3½ to 4½ per cent. Of his cases in 25 per cent. the bleeding was purely vicarious—that is, substitutional; in 75 per cent. supplementary to the normal uterine loss.

Other authorities disagree with these findings. Bethel Solomons (1934) regards haemoptysis, haematemesis, melaena, epistaxis, and purpura as being the most common manifestations, but the general consensus of opinion seems to place the sources of the haemorrhage in order of frequency as follows:

1. *Nasal Mucous Membrane.*—The haemorrhage may be quite severe or only very slight; but in either event it may persist throughout the normal period. Apparently no one has yet explained why the nasal mucous membrane should so often be the source of these bleedings, but Novak (1931) suggests that the cause may be closely related to the occurrence of the so-called nasal dysmenorrhoea.
2. *Stomach.*—Usually only slight bleeding.
3. *Intestine.*—Generally slight and appearing as blood in the stools during the menses.
4. *Lungs.*—Haemorrhages may have fatal results.
5. *Breasts.*—As a rule merely a sero-sanguineous discharge at the menses, but there may be definite blood.
6. *Skin.*—Haemorrhage from the skin occurs as "bloody sweat." Erythema of local patches of skin develops and is followed by oozing of pure blood, or there may be a purpuric rash only.
7. *Lips.*
8. *Eyes and Eyelids.*—Haemorrhage into the retina with each period has been recorded by Huizinge, Powell, and others. Claiborne (Novak, 1931) has reported one case of vicarious haemorrhage from the lower lids.
9. *Naevi.*
10. *Kidneys.*
11. *Old cicatrices.*
12. *Abdominal fistulae.*
13. *Umbilicus.*—A case is reported by Gardner (1898). For three months in succession his patient bled from the umbilicus at the menses for twenty-four to forty-eight hours.

Other rarer sites are teeth, gums, varicose ulcers, amputation stumps, external auditory meatus, nails, and haemorrhoids.

Problem of Causation

There is one common factor in most of the reported cases—namely, that uterine menstruation has been suppressed or less than normal. In the majority of cases irregular amenorrhoea has been the rule. In spite of much speculation no satisfactory explanation has been put forward. Most of the theories are based on the assumption that menstruation is not a local but a systemic process. Barnes (Novak, 1931), in a review of the explanations adduced, submits the theories:

1. That it is caused by plethora.
2. That it is the result of a weakened condition of the tissues, perhaps hereditary.
3. That it is due to an abnormality in the structure of the blood vessels.

More recently W. H. Condit (1916), in the *American Journal of Obstetrics,* laid emphasis upon changes in the blood pressure at the time of menstruation. These changes may be summarized briefly as being a rise in systolic pressure prior to and during the early part of menstruation and a diastolic rise during the period. The pulse pressure is above average during the flow. His evidence is unconvincing, however. A more reasonable explanation than any of the foregoing is given by Novak (1931), who suggests that in certain cases there is present in the various tissues an abnormal sensitivity to the action of the blood-borne ovarian hormone, with a result analogous to its action on the uterine endometrium. That, at least, sounds logical, more so than the idea that while the tissues themselves are normal an excess of ovarian hormone derived from supernumerary ovaries or accessory ovarian tissue, such as is found in the broad and ovarian ligaments, may precipitate the vicarious haemorrhages.

Menstruation and the Nervous System

In a proportion of cases there is a very definite relation between epilepsy and menstruation. In so-called hystero-epilepsy the epileptic seizures come on a day or two before or at the onset of the period in the great majority of cases. In the intermenstrual interval these hystero-epileptics have no seizures. On the other hand, menstruation often brings on hysterical attacks in girls and women already predisposed. In many such cases there is dysmenorrhoea of the spasmodic variety. Dipgen and Schröder (1906), in a series of seventy-five hysterical women, noticed that menstruation began at an unusually advanced age and that it was abnormally scanty. This they suggest as indicating defective development of the reproductive organs.

D. M. Greig (1932) undertook an extensive review of the subject of recurrent bleeding from the eyes. He quotes many recorded cases which serve to show that the hysterical state is more often the exciting cause than are puberal readjustments and menstrual irregularities.

Although hysterical fits may be more apt to occur at menstruation it is the instability of the nervous system and the hysterical state that are more to blame than the local utero-ovarian upset. He emphasizes the significance of the fact that so many of the women who exhibited the phenomenon of recurrent ocular bleeding were potential epileptics. He concludes that these ocular haemorrhages, though a few were connected with the menses and a few brought on by postural effects, were for the most part not connected in any way with menstruation, the cause lying in a central psychic excitation and not in a local mechanical one.

Case Report

The case which is the basis for these general remarks was that of a young girl aged 18, a hotel waitress, to whom I was first called on April 17th, 1936, as she was said to be having "fits" and "bleeding from the eyes." I arrived just after she had recovered from an attack, and was told that since August, 1935, she had suffered from recurrent attacks of bleeding from the nose, mouth, eyes, and ears accompanied by "fits."

HISTORY

She first menstruated at the age of 16. Previously she had had "catarrh of the womb" (? discharge), which was untreated. At first her periods were irregular at six-week to eight-week intervals, with loss for three to four days. Later they became stabilized, lasting for four to six days every twenty-eight days, with moderate loss and spasmodic dysmenorrhoea. In August, 1935, she had an attack of "? sunstroke," when her face was very red and she had marked infra-orbital oedema. She was ill for two months, and had amenorrhoea. On her recovery the periods altered, to last for three days at twenty-eight to fifty-six-day intervals, with a very slight loss. It was at that time (October, 1935) that the extragenital haemorrhages from the nose, mouth, ears, and eyes—chiefly the latter—began. The bleeding had been seen by many people, who said that from the eyes "drops of blood ooze out." Up to April, 1936, these haemorrhages coincided with the times for her periods, and she had the normal loss at the same time on two occasions.

In November, 1935, she was operated on at Ulverston and had the "womb stretched"—presumably a dilatation and curettage—and thereafter had only menstruated *per vias naturales* twice, in February and in April, 1936. The other haemorrhages continued at the expected time of menstruation. A point of interest is that while she was in hospital awaiting operation she saw a girl in the ward having a hystero-epileptic attack, which frightened her and made her hope she would not have similar seizures. In February, 1936, there was normal uterine loss, with no extragenital haemorrhages, and two "fits." In March, 1936, there was amenorrhoea with bleeding from the eyes and a slight haematemesis. In April she was seen on the third day of her period. There had been numerous "fits" and frequent bleeding from the eyes, nose, and ears before the onset of her period on April 14th. She said she could tell when the eyes were going to bleed as the haemorrhage was preceded by an intense bilateral headache.

She had had chorea in 1930 and rheumatic fever with a "diseased heart" (uncorroborated on examination). There was no history of epilepsy. The patient came from a mining village, and had had a very unpleasant home life. Her mother was dead, and her father and one other sister were at home. The father was more or less a sexual pervert, and had often attempted intercourse with his daughters.

EXAMINATION

She was a well-built, well-nourished girl, but rather anaemic. Quite alert mentally, but during questioning she had another attack while sitting in her chair. She went flaccid, her head drooped as if she were asleep, and ordinary tears poured down her cheeks from both eyes. Pulse and respiration were unaltered, and the corneal reflex was present. The attack lasted about forty seconds, and thereafter she became quite normal again. Detailed examination revealed no abnormality. Heart, lungs, abdomen, mouth, throat, and eyes were all apparently normal. The thyroid was not enlarged. Blood pressure was 126/82 mm. Hg; no abnormal constituents were discovered in the urine.

Discussion

The problem presented by this case seemed extremely complex if the story were really true. First, the fits might be either functional—that is, hysterical—or a true petit mal. Both of these conditions, as we have seen, are quite common in relation to menstruation in women of the nervous or epileptic type. Secondly, the bleeding from the mucous membranes might have two explanations: (*a*) there might be some very minute self-inflicted injury, or (*b*) it might be a true example of vicarious menstruation. So that the problem presented was to determine, if possible, what part was played by any functional lesion of the nervous system, and secondly, whether local treatment or gynaecological therapy, by hormones, could offer any prospect of cure to the patient.

At first I regarded the "fits" as being in the nature of true minor epilepsy, but subsequently revised my opinion in favour of a hysterical basis. Operation seemed to be contraindicated—dilatation and curettage having been done without success—as it was likely that any further operative trauma might increase the nervous reaction of the patient.

Treatment and Progress

The treatment given consisted of calcium and sodium lactate 10 grains three times a day, with phenobarbitone tablets 1/2 grain morning and night, and injections of "plurigland" (Oxo) once a week, subsequently altered to antuitrin S daily on the advice of Professor Leyland Robinson, for three days before the period and daily throughout.

April 26th, 1936.—Period due in fourteen days. To-day bled from both eyes. Seen by me in surgery with dried blood on lids and cheeks. No sign of injury.

April 30th.—Recurrence of haemorrhage from both eyes. Conjunctivae flushed; cornea dull; severe photophobia.

May 7th.—Period due on the 9th; injection of 1 c.cm. antuitrin S given.

May 8th.—Injection of antuitrin S.

May 9th.—Injection of antuitrin S. Patient dreads injections, and had a "fit" in the surgery while the syringe was being filled. Not a true petit mal—definitely hysterical.

May 10th.—Period began previous night; haematemesis.

May 11th.—Profuse haematemesis and frequent haemorrhages from both eyes and the right ear, definitely confirmed by three witnesses.

May 12th.—Considerable haemorrhage from eyes and from the left ear; severe haematemesis; period ceasing. Admitted to Westmorland County Hospital.

May 13th.—During the night following admission she had slight haemorrhage from both eyes and mouth; blood seen coming from the eyes during sleep; slight recurrence from eyes at 3 p.m.; blood pressure 120/80 mm. Hg; red blood cells, 5,260,000; white blood cells, 6,400 per c.mm. (House-surgeon's count.)

May 14th.—Slight haemorrhage from eyes seen at 10 p.m., 10.30 p.m., and 4 a.m.

May 15th.—Bled from eyes several times and from mouth and right ear.

May 16th.—Blood from eyes and right ear.

May 17th.—No further haemorrhages.

May 19th.—Discharged at own request to her home in West Cumberland.

July 1st.—Admitted to Royal Southern Hospital, Liverpool, under Professor Leyland Robinson. On day of admission bled from inner canthus of both eyes.

July 2nd.—Epistaxis; haemorrhage from ears and eyes.
July 4th.—Bleeding from ears, eyes, nose, and umbilicus.
July 5th.—Slight haematemesis; period began.
July 12th.—Has had haemorrhages off and on from eyes, ears, nose, and umbilicus; period ended.
July 13th.—Seen by physician; no evidence of organic lesion of central nervous system; heart sounds normal; blood pressure 115/80 mm. Hg.
July 14th.—Blood examination: red blood cells 4,400,000, diameter 7.17 μ, haemoglobin 74 per cent., colour index 0.84, bleeding time normal; white blood cells 7,750 per c.mm.; differential count: polymorphs 69 per cent., eosinophils 6 per cent., monocytes 1 per cent., lymphocytes 24 per cent. (large 10 per cent., small 14 per cent.).
July 16th.—Blood calcium 10.03 mg. per 100 c.cm.
July 22nd.—Seen by ear-nose-and-throat surgeon, who reported no source of bleeding manifest in the auditory apparatus.
July 24th.—Seen by ophthalmologist. Vision normal in both eyes; bluish sclerotics; fundus normal.
July 28th.—Discharged.
August 15th.—Seen at surgery. Feels and looks well. Period on August 1st as expected; no accompanying haemorrhages.
Thereafter lost sight of as she left this district.

Conclusions

Into what category can we fit this case? The salient features are a history of previous "rheumatism of the nervous system"; with a degrading home life and with a half-formed dread of developing hystero-epilepsy in a girl who, after a definite illness, exhibits hysterical attacks at the time of menstruation, accompanied at times by extragenital haemorrhages. Such a picture does not altogether correspond with one's idea of true vicarious menstruation—that is, substitutional haemorrhage. The sequence of events is not definite enough—sometimes she had "fits," sometimes amenorrhoea, sometimes normal uterine loss, and sometimes extragenital haemorrhages, and sometimes a combination of these phenomena. Nor does it fit in satisfactorily, though it is closer to it, with one's ideas of the supplemental variety of vicarious menstruation, for the haemorrhages did not always correspond with the menses.

A study of the facts of this case offers no explanation as to the exact mechanism of the haemorrhages, except of a rather negative kind. In this case they did not seem to result from plethora nor changes in the blood pressure. Nor does her past menstrual history suggest that defective development of the pelvic organs was a factor in their causation. Apart from a tentative and non-committal "vasomotor instability" there seems no obvious explanation. Certainly self-inflicted trauma can be altogether ruled out—the bleeding was seen by many witnesses, including sceptical sisters, nurses, and house-surgeons.

There is, however, no doubt in my mind but that the "fits" were purely hysterical in character. An old choreic is a notoriously emotional individual at best, and this girl's attention would seem, by a chain of circumstances, to have been focused on her menstrual habits and irregularities, with a resultant mental disturbance.

My thanks are due to Professor Leyland Robinson for his interest in and help with this case.

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THE FRIEDMAN TEST IN HYDATIDIFORM MOLE AND CHORION EPITHELIOMA

BY

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The following four cases in which the forty-eight-hour Friedman test was used show the value of the test so clearly that they seem worth recording. The test was used (1) to establish the presence of a hydatidiform mole or a chorion epithelioma, (2) as a criterion of the complete removal of a mole or the presence of a subsequent chorion epithelioma, and (3) as evidence of the absence of secondary deposits after hysterectomy for chorion epithelioma.

Case I

A patient, aged 29 years, was admitted on January 6th, 1934, for an incomplete abortion. The menstrual periods had been regular, the last being on October 29th, 1933. She started bleeding on December 21st, and the loss had continued off and on until admission; after admission clots were passed at times. On January 16th, 1934, the os was dilated and two pieces of what resembled placental tissue were removed. On the 22nd products of conception resembling a vesicular mole were discharged. Histological examination showed a hydatidiform mole with considerable degeneration. On January 30th the Friedman test was positive. She was sent home on February 10th to attend as an out-patient for further tests. On March 6th the reaction was positive and again on March 26th, when she was readmitted for vaginal haemorrhage. Panhysterectomy was performed two days later on the strength of the Friedman test having remained positive for over two months after the passing of the mole. There was a small tumour in the uterine wall at the fundus, which proved histologically to be a chorion epithelioma. On April 15th the test was positive, and on April 23rd weakly positive. The patient was discharged on May 17th, and further tests as an out-patient on July 3rd, August 1st, and August 27th were all negative.

Case II

A patient, aged 27 years, was admitted on January 11th, 1934, for an incomplete abortion. The periods had been regular but profuse, the last being on September 12th, 1933. In October, 1933, a brownish discharge began and persisted. Two weeks before admission she started to lose blood, at times profusely. On January 27th, 1934, the cervix was dilated and the products of conception removed. These resembled a hydatidiform mole, and histologically very degenerated and oedematous chorionic villi were seen. On January 31st a vesicular mole was passed, and on February 16th the patient was discharged. On February 26th, March 26th, and May 24th the Friedman test was negative. On September 2nd the patient reappeared complaining of a brownish discharge; the test was negative. On December 27th the test was positive, with a history of nine weeks' amenorrhoea. The patient has since been delivered of a full-term healthy child.

Case III

A patient, aged 25 years, was admitted on April 12th, 1934, for flooding after a two-months abortion six weeks previously. On April 15th the uterus was explored and a friable mass removed; histologically this was a chorion epithelioma. On the 16th the Friedman test was positive. Panhysterectomy was performed on the 23rd. On May 1st the test was weakly positive, and it was completely negative on May 22nd, June 25th, July 3rd, and November 12th, 1934.

Case IV

A patient, aged 22 years, was first seen on June 29th, 1936. She had had a normal confinement two years previously, and the periods had been regular, four-weekly, till December, 1935, then three-weekly till late March, 1936. There was no loss in April, 1936. In May she had a profuse haemorrhage, followed by daily bleeding, which was usually slight. On examination the uterus was about the size of a three-months pregnancy, doughy in consistence, and uneven. The os was closed. On June 30th the Friedman test was positive in a dilution of 1 in 100, and a diagnosis of hydatidiform mole was made. On June 7th a tent was inserted and the vagina plugged. Next morning there was a profuse haemorrhage on removing the plug, and the patient collapsed. A direct transfusion of 400 c.cm. of blood was given at 9.15 a.m. At 3 p.m. 5 c.cm. of 1 per cent. Congo-red was injected intravenously and the patient examined under an anaesthetic. Most of the mole was found in the vagina, only small portions being removed from the cavity of the uterus. There was very little haemorrhage, and a further blood transfusion was not considered necessary. Histological examination confirmed the diagnosis. The patient was discharged on July 25th, 1936. The Friedman tests carried out in this case were as follows:

Date (1936)	Urine Undiluted	Urine 1 in 10	Urine 1 in 100
June 30th ...	Positive	Positive	Positive
July 6th ...	Uterus cleared		
July 9th	Positive	Weak positive	Negative
July 13th ...	"	Negative	"
July 20th ...	Negative	"	"
August 24th ...	"		
October 12th ...	"		
November 3rd...	"		

Conclusion

Case I shows clearly the value of the test in revealing early those cases of hydatidiform mole which pass on to chorion epithelioma. Tests are being carried out at monthly intervals on Case IV, and will be continued up to the end of a year to exclude this occurrence.

Case II shows the value of the test in confirming the complete removal of the mole and in disproving any pathological significance in the brownish discharge seven months after a mole had been passed.

Case III shows the value in indicating the complete removal of the uterine tumour and the absence of any secondary deposits.

Case IV is interesting in showing the rapidity with which the test becomes negative after the complete removal of a mole, and also shows the value of intravenous Congo-red in preventing haemorrhage. In Cases I and III panhysterectomy was performed mainly on the result of the Friedman tests, and in each case this course was completely justified.

In conclusion, I wish to thank my colleagues for permission to make use of the clinical notes of the cases.

The widow of the first Lord Manton and her four sons have made a gift of £8,000 to provide a new *x*-ray department for the General Infirmary at Leeds. The late Lord Manton, after whom the department will be named, was a large benefactor of the hospital; he was formerly Mr. Joseph Watson, head of the well-known firm of soap manufacturers. Plans for the new *x*-ray department have already been approved and building will begin almost at once, in the expectation of completing the work by the end of this year.

Clinical Memoranda

Sclerosing Submucosal Injection of the Turbinates

In the treatment of conditions such as early hypertrophic rhinitis, non-specific hay fever, and nasal asthma there is far too great a tendency to have recourse to the thermocautery. The description of a method which can produce excellent results without the same risks may be of service to those unacquainted with it. The mucous membrane of the nose is lined with ciliated columnar epithelium, which has as its function the maintenance of the ciliary stream for the removal towards the nasopharynx of mucus, dust particles, and micro-organisms. Once damaged this ciliated epithelium is not regenerated, but is replaced by squamous cells, with subsequent weakening, if not total loss, of the ciliary stream over the affected areas of the nasal surface. The risks of cauterization are:

(*a*) The production of adhesions between contiguous portions of the nasal surface, with increase of nasal obstruction, stagnation of nasal secretion, etc.

(*b*) Over-extensive cauterization, or repeated applications of the cautery (as is so often necessary), cause excessive damage to the ciliated epithelium. Adherence of nasal secretion, with inspissation and crusting, results from the loss of the ciliary stream. In the course of time ulceration occurs, and the condition drifts on into a state of atrophic rhinitis, not uncommonly with fetor—that is, ozaena has been produced.

On the other hand a sclerosing submucosal injection of the turbinates aims at producing scarring in the erectile tissue of the subepithelial layers of the mucosa and in the submucosal space, very little damage being done to the ciliated epithelium. The shrinkage produced is excellent, and close adherence of the mucosa to the underlying bone is secured. The procedure rarely has to be repeated, and when it does is still comparatively harmless. The minimum of inconvenience is caused to the patient. Finally, the results secured have been very satisfactory. Strict attention to detail being of the utmost importance, the technique is given in full. The following will be required:

5 per cent. cocaine solution (with 2 to 3 minims of 1 in 1,000 adrenaline to the drachm); 20 per cent. cocaine solution; 75 per cent. alcohol; 30 per cent. carbolic in paraffin; bicarbonate of soda solution (10 grains to the ounce); nasal speculum; syringe recording minims, with angle mount and special fine three-inch needle; two wooden applicators; gallipot; enamelled iron bowl; cotton-wool; tumbler; kidney basin for used instruments; mackintosh apron for patient's use.

TECHNIQUE

1. Spray the nasal cavity with 5 per cent. cocaine and adrenaline solution.

2. While this is producing anaesthesia and a certain amount of shrinkage, (*a*) load the syringe with carbolic in paraffin solution; (*b*) fill the gallipot with 75 per cent. alcohol; (*c*) fill the tumbler with sodium bicarbonate solution; (*d*) prepare double-ended nasal brushes with the wooden applicators and cotton-wool.

3. Paint the nasal cavity freely with 75 per cent. alcohol.

4. Touch the spot near the anterior end of the inferior turbinate selected for injection with 20 per cent. cocaine.

5. Give the enamelled iron bowl to the patient to hold, cautioning him to swallow nothing, but at once to spit out into the bowl anything which may run back into the throat.

6. Introduce the needle with loaded syringe attached at the selected spot, then run it along under direct visual control

in the submucosal layer parallel to and a little above the lower border of the inferior turbinate till its point lies near the posterior end of this structure; here liberate 1 to 2 minims of the carbolic solution. Then withdraw the needle till its point lies at about the middle of the turbinate; liberate another 1 to 2 minims of the solution. Once more withdraw the needle till its point is near the point of entry, and liberate a final minim of the solution.

7. Remove the needle quickly and at once paint the nasal cavity freely as before with 75 per cent. alcohol. (The alcohol tends to neutralize any of the carbolic solution which may have escaped from beneath the mucosa.)

8. The patient should finally be made to gargle and wash out his mouth with the bicarbonate of soda solution.

COMMENTARY

The middle turbinate may be treated, if necessary, by a similar injection, but only 1 minim of the carbolic solution should be introduced near the point of entry of the needle. The turbinates of the opposite side may also be treated at the same sitting, though it is better policy to allow an interval of a few days before doing so. Extreme care should be taken to avoid perforating the mucous membrane with the needle-point when running the needle along in the submucosal layer, lest some of the carbolic solution escape and damage the ciliated cells. If the procedure has been successfully carried out the mucous membrane should look markedly blanched almost immediately after injection. Haemorrhage may be fairly brisk for a few minutes, but soon stops, when the patient can go home; he should, however, be warned to expect a "stuffy head cold" for the following twenty-four to forty-eight hours. The patient should return for inspection one week after injection, when shrinkage will be found to be well advanced, to become complete and permanent in three to four weeks. The method may be employed alone or in combination with other forms of treatment. Lastly, it is relatively easy of application once the technique has been acquired.

Bath. C. A. HUTCHINSON, F.R.C.S.Ed.

Peripheral Neuritis as a Sequel to Sun-bathing

The following case may be worthy of recording.

A woman, aged 29, spent a very warm day last August sun-bathing at the seaside. She lay on the beach for about six hours without any covering on her head or neck. That night she felt giddy and ill, and the next morning found that she could not stand up owing to pain in her ankles.

I saw her soon afterwards, and found that both her feet were dropped and she was unable to flex them. The knee-jerks and the plantar reflexes were absent on both sides, and there was loss of epicritic sensation over the outer sides of both legs and feet. The temperature and pulse rate were normal, albumin was absent from the urine, there was no history of work in any toxic atmosphere, and no trace of any specific disease.

After twelve days' rest and gentle massage she was able to get up, but could only walk by dragging her feet along the floor. Knee-jerks and sensation were then present but not normal. She has now completely recovered.

This appears to be a definite case of peripheral neuritis caused by undue exposure to the sun's rays, and should be a warning that more unfortunate sequelae than blisters may result from sun-bathing.

Aberdare. JAMES HANNAN, M.B., Ch.B.

An Unusual Case of Anthrax

In 1929, as recorded in this *Journal*, there came under my care a baby, 15 months old, suffering from cutaneous anthrax, the lesion being situated near the middle of the anterior surface of the left forearm. Her father was employed in a local tannery, and it was presumed that the infection originated from spore-infected dust carried on his clothing. The age of the patient and her recovery made the incident an exceptional one, and a further interest lay in the fact that the baby's father had also been a patient of mine, suffering from anthrax, eight months previously.

There has recently come under my care a patient, an adult female, in whom an almost parallel series of circumstances are presented.

CASE RECORD

Mrs. X., aged 28 years, consulted her doctor on October 28th, 1936, on account of an angry pimple, which had followed upon a small scratch a few days before, in the middle of the front of her left forearm, and had grown worse. The doctor, suspicious of its appearance and alert to the liability to anthrax infection in the district, sent her to Dr. H. A. Mitchell, medical director, Evans' Biological Institute, Runcorn, for bacteriological investigation. Anthrax bacilli, definite though not numerous, were found on direct film examination, and she was at once sent to the City Hospital, Fazakerley.

On admission (October 29th) there was a typical malignant pustule about four inches above the left wrist, rather larger than a shilling, with its ring of sero-sanious vesicles and dark centre and considerable swelling and induration reaching from the wrist almost to the elbow flexure. There was no axillary adenitis, and, as usually experienced, a comparative absence of severe pain. Her general condition was good, with no evidence of toxaemia. The temperature was normal. She at once received 180 c.cm. anti-anthrax serum (Mulford) with, in addition, 0.3 mg. neokharsivan intravenously; eusol fomentations were applied two-hourly to the lesion, and, as I have suggested elsewhere (1928), no excision was made.

On the following day little alteration either way in the focus was to be seen, and a further intravenous injection of 100 c.cm. anti-anthrax serum (Mulford) was given. The next day, however, a definite abatement in the local swelling was evident; for this reason, as well as the fact that she now, earlier than ordinarily might have been expected, developed a copious urticarial serum rash, no more serum was given. The rash lasted for two days.

The swelling and induration continued to subside rapidly, and the infected focus shrivelled. By November 3rd cultures from the lesion were negative. The necrotic centre dried, and was cast off in ten days or so, leaving a shallow healing ulcer, and, this having healed, the patient left hospital on November 24th little the worse for her adventure.

The bacteriological diagnosis was confirmed by film, culture, and guinea-pig inoculation by Professor Hedley D. Wright, city bacteriologist, Liverpool, as also were the later cultural investigations.

REMARKS

The special interest in this case arises from the fact that the patient is a housewife and does not do any other work. Her husband, however, is an employee at a local tannery, and it is a reasonable inference that his wife's infection resulted from anthrax-infected dust carried from his work on his clothing. Coincidence goes a step further, as he himself was a patient under my care in this hospital six years ago, suffering from anthrax.

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Reviews

AN INTERPRETATION OF PRACTICAL MEDICINE

Funktionelle Pathologie eine Klinische Sammlung von Ergebnissen und Auschauungen einer Arbeitsrichtung. By Dr. Gustav von Bergmann. (Pp. 547. RM. 25; geb., RM. 26.60.) Berlin: J. Springer. 1936.

The nations of Europe, recovering from the effects of the great war, find new problems awaiting solution. This revival of interest in the health of the people is not only a stimulus to those in central authority entrusted with making provision for improved hygiene, but also a call or opportunity for the medical profession to revise, even to recast, its attitude towards medical problems. Professor von Bergmann of Berlin would see in the changing circumstances an incitement to a change of mind in the physician himself. He demands that when dealing with a patient the doctor must consider not only the disease but the patient, his antecedents, his environment, and his psychology. Quoting with approval the Chinese philosopher's aphorism "that the sum of the parts is not the whole," he thinks that the right emphasis should be not as at present most upon the causal factors and the localization or degree of morphological disturbance—the anatomical findings are merely the concluding document in the pathological description of the course of the disease—but primarily upon the often insidiously beginning disturbance of function. Out of this disturbed function come later the formal reactions of structure. From this point of view he has produced a book which can by no stretch of imagination be regarded as a textbook of medicine or pathology, but which will be read with interest and is a valuable contribution to the philosophy of medicine. The results of twenty-five years' work and teaching are put together to offer an interpretation of practical medicine as a study of functional pathology.

With the introduction of radiology Professor von Bergmann's observations on the movements of the colon in man awoke in him a sense of many symptoms arising from a disturbance of healthy co-ordinated regulation, dyskinesia, a neuromotor disharmony. Disturbances of function of the peptic part of the alimentary tract were easily investigated by means of a stomach pump. Variations in secretion and motility following stimuli, the inhibitions that may follow shock, the discovery of the frequency of peptic ulcer and gastritis, led to the author's discarding the conception of gastric neuroses, and later of neuroses of any isolated organ. There may even be a spasmodic or neurogenic peptic ulcer arising from disturbed function which would afford certain analogies to the doctrine of dyskinesia. Perhaps most support for the doctrine followed observations on the extra-hepatic bile ducts and gall-bladder, and in dyskinesia there is at least one initiating factor in delay, inflammation and stone formation in the gall-bladder. But associated with these changes there are alterations of the liver parenchyma itself, and von Bergmann would relate to small injuries with protein destruction a type of auto-intoxication, different forms of hepatic disease up to acute yellow atrophy in acute states, and cirrhosis in chronic states.

This view of inflammation as a problem not only of pathological anatomy and not only of bacterial infection and immunity but as a central part of human clinical pathology is extended to diseases of other organs. The earliest stage of this inflammation, whether in hollow viscera with glandular mucous membrane or in the large glands themselves, is an altered function, and there is an uninterrupted sequence from this disturbance of function to the gross anatomical findings. To the susceptibility of tissues vitamin-lack contributes, and through the blood stream the secretions of the endocrine glands are transmitted. How widespread the effects may be is shown in the pluriglandular disturbance, anorexia nervosa, in which all the tissues and organs waste, and the life processes are at a low ebb as in a psychic hunger-strike. The disharmony of the endocrine glands has a striking example in hyperthyroidism, in which hereditary influences play an important part. The problems of circulation depend, too, on the neuro-muscular mechanisms in the peripheral, the coronary, and the cerebral vessels. The neuro-regulation of the circulation, governed from nerve centres which react to peripheral stimuli, has led far away from any satisfying conception of visceral neuroses as such.

The modern physician can no longer divide diseased conditions into functional and organic. He must be aware of the psycho-physical disequilibrium in his patient. His mission must be to take equal account of the need for his help called for by the subjective and objective aspects of the patient as a whole. Without belittling the great advances obtained by the synthesis of scientific researches in medicine, and the application of laboratory methods, emphasizing indeed the value of these in academic teaching and in the pursuit of further knowledge, von Bergmann points out that in his care of his patient the skilled physician must often enough base his treatment on accumulated experience rather than upon exact knowledge. The shrewd doctor will strive to detect the early disturbances of function and correct them before they bring about changes of morbid anatomy.

TACHYCARDIA

Les Névroses Tachycardiques. By L. Gallavardin and A. Tourniaire. (Pp. 122; 24 figures. 17 fr.) Paris: Masson et Cie.

Les Tachycardies et leur Traitement. By Dr. Antonin Clerc. (Pp. 88; 6 figures. 12 fr.) Paris: J. B. Baillière et Fils.

In their monograph Drs. Gallavardin and Tourniaire have presented the results of an extremely illuminating study of those cardiac syndromes which are related to disturbances of the sympathetic system. A discussion of symptomatology includes many pulse charts illustrating the milder and more severe forms, the daily and periodic variations of heart rate, and the abnormal responses to exercise and change of posture. The instability of body temperature, the variations in blood pressure, and the leucocyte count are further paths of investigation; electrocardiographic and orthodiagraphic studies show uniformly normal results in these patients. The authors demonstrate that hyperthyroidism is not an aetiological factor, since the basal metabolic rate is neither constantly raised nor altered by iodine medication, and also since the subjects of nervous tachycardia do not give the hyperglycaemic response to glucose ingestion shown by thyrotoxic patients. The pathogenesis is summarized as an intense excitation of the sympathetic supply of the heart with not only cardio-accelerator but also vaso-constrictor and hypertensive consequences, accompanied often by an alteration in the rhythm of the heat-regulating centres. Drs. Gallavardin and Tourniaire believe that the clinical study of nervous tachycardia is yet in its earliest stage, and that it holds in store "d'heureuses surprises à ceux qui voudront bien s'y consacrer."

Dr. A. Clerc takes a broader field in his survey. He considers not only the essentially nervous forms but also

paroxysmal tachycardia and the accelerations of cardiac rhythm associated with morbid conditions in the heart and endocrine glands. Among therapeutic measures in paroxysmal tachycardia are mentioned the well-known reflex methods of slowing the heart, such as the compression of the vagus and the oculo-cardiac reflex. Reference is made to the induction of vomiting by ipecacuanha, and to the risky use of apomorphine in this connexion. In spite of its theoretical disadvantage in inhibiting the vagus, atropine is accorded a place in the therapeutic armamentarium. Hochrein is quoted as advising the oral administration of atropine in doses sufficient to produce dryness of the mouth. This measure is said to reduce the frequency and severity of bouts of paroxysmal tachycardia. Dr. Clerc writes in a more dispassionate vein than the authors of *Les Névroses Tachycardiques,* but since he focuses attention chiefly upon treatment, and since the tachycardias are notoriously refractory to therapeutic measures, this is, perhaps, not surprising.

QUEEN CHARLOTTE'S MIDWIFERY

The Queen Charlotte's Textbook of Obstetrics. By Members of the Clinical Staff of the Hospital. Fourth edition. (Pp. 674; 291 figures, 4 coloured plates. 18s.) London: J. and A. Churchill. 1936.

This fourth edition of a highly successful textbook of obstetrics by members of the staff of Queen Charlotte's Hospital appears with eleven names on the title-page as having a part in its authorship. Since the last issue the staff of the hospital has been increased to eight, and after their names, but separated by the heading "with the assistance of," are three more names.

In the preface attention is specially drawn to the recent work of Colebrook from the hospital research laboratory, which has been incorporated in the chapter on puerperal sepsis. The varieties of this disease are there differentiated by the causative organism and their clinical features contrasted. For example, those of the haemolytic streptococcus and the anaerobic streptococcus are set out in parallel columns, showing that the latter is distinguished by its prolonged course, localized and slowly spreading lesions with multiple abscesses of lung, and venous thrombosis common but general peritonitis very rare, while the opposite generally holds in haemolytic infections. Staphylococcic infections are usually local and mild, but general septicaemia with metastatic abscesses may develop, in which the mortality rate is high. The clinical characteristics of infection by *B. coli* and *B. welchii* are also noted. Full instructions are given for their investigation, including the taking of blood cultures. Clinical types are also classified separately as local (that is, confined to the uterus), infections confined more or less to the pelvis, and generalized infections. Regarding treatment, chemotherapy and immunological methods have proved disappointing. The danger of intervention, particularly curettage, is emphasized, and early drainage of the pelvis by laparotomy in general peritonitis does not seem to be advocated so strongly as in the previous edition, the conclusion being that it is too soon to arrive at a final decision. The chapter on "Pyrexia in the Puerperium" is excellent on both pathological and clinical aspects, and provides a remarkable illustration of the gain to this book by its authors being able to draw on the resources of the hospital, the isolation block, and the research laboratories.

The high standard of its predecessors in matter and teaching is fully maintained, though there seems some falling off in the editorial supervision. It is unseemly to admit to a textbook the slang of medical students and nurses, as in a subheading in large clarendon type "Diagnosis of a Temperature in the Puerperium" and its opening words "If a patient develops a temperature"; also elsewhere we learn that a baby may "develop a few degrees of temperature." But we have a fellow-feeling with the captain of this eleven and the many responsibilities on graver matters he has had to face.

TESTICULAR DISEASE

Diseases of the Testicle. By Hamilton Bailey, F.R.C.S. (Pp. 166; 129 figures, 10 coloured. 12s. 6d. net.) London: H. K. Lewis and Co. 1936.

Mr. Hamilton Bailey has compressed, within the compass of a little more than 150 pages, all that it is essential for the student and practitioner to know of the subject. Like other books by the same author, this volume is clearly written and very well illustrated, even the smallest manœuvre being thought worthy of a drawing. The teaching in the book is thoroughly up to date, and there is a useful list of references to original articles given at the end of each chapter. An unusual feature is the absence of an author's preface.

The opening chapter deals briefly with the anatomical and physiological aspects of the descent of the testicle, and is followed by five chapters upon imperfect descent and its treatment. Here there is a short account of the modern endocrine therapy of delayed descent, although insufficient emphasis is laid upon the difference between unilateral and bilateral cases in their aetiology and their response to this treatment. The operative treatment by various types of orchiopexy (which title is used, following Torek, instead of the more usual orchidopexy) is fully described; the author's preference is for the use of a temporary internal wire splint. The next two chapters are devoted to a brief account of the normal anatomy and of the methods of examination of the testicle. In the rest of the book such conditions as hydroceles, torsion, inflammatory lesions, and new growths are adequately and concisely dealt with. In the case of neoplasms of the testicle the new hormonal test is described, and the hope is expressed that its use may lead to earlier diagnosis and treatment.

Not the least interesting is the final chapter upon rejuvenation, in which there is a brief description of the Steinach operations and of testicular grafting. As the author wisely comments, however, "there has been a tendency for these operations to be performed by a type of practitioner who is not above advertising to the lay public, and rejuvenation is a subject which lends itself to arresting newspaper copy." The book is exceedingly well produced, and the publishers are to be congratulated upon the quality of the paper and the excellence of the reproductions, whether line, half-tone, or coloured.

PROGRESS IN PHYSIOLOGY

Evans' Recent Advances in Physiology. Fifth edition, revised by W. H. Newton, M.D., M.Sc. (Pp. 500; 120 figures. 15s.) London: J. and A. Churchill. 1936.

The task of bringing up to date a volume devoted to recent advances is one calling for certain qualities of ruthlessness. For the reviser must be prepared to subject the work to a considerable process of metamorphosis and in many ways to change the whole content and the approach to the various matters raised. In submitting his book to revision by a younger mind Professor Lovatt Evans has shown praiseworthy judgement, and the highest praise we can offer to Dr. Newton is that his work is worthy of the original editions. It is easy, and too often the practice

(particularly in German writers on recent advances), to compile a more or less connected summary of the published work in a given domain during a chosen number of years and designate such a compilation as "recent advances." Such a work is on the whole not in the tradition of English physiology, which, in addition to making some of the most fundamental discoveries in physiology, has never lost a certain subtly philosophical attitude towards the subject. It is not a matter of surprise to find that among our greatest physiologists in recent times we find a poet, a philosopher, and a mathematician.

In Dr. Newton's expositions we detect not a little of the desire to discover in the mass of facts at his disposal the undercurrent of what we may loosely call the fundamental reality behind the experimental results. For the purposes of such a subject as physiology the perception of the "reality" lying behind the diverse experimental results, often apparently conflicting with one another, constitutes the advance. For physiology as such does not advance: it is our perception, appreciation, and sometimes application of fundamental physiological harmonies, correlations, and properties which advance. The extraction of these fundamentals from out of the tangled masses of experimental results and their presentation in such a way as to produce in the mind a composite picture which is assimilable with not too great difficulty is, as we conceive it, the task of the writer of a book on recent advances. Dr. Newton has in his book fulfilled these requirements with notable success, and his work will be welcomed by those who have pride in the writings of English physiologists.

Notes on Books

LUCAS'S *Forensic Chemistry and Scientific Criminal Investigation,* now appearing in its third edition (E. Arnold, 18s.), has become well known and is held in high esteem by practitioners of scientific work in regard to crime. Occupation in this work calls for alert regard to the danger of overlooking the significance of a feature of observation and the no less danger of ascribing such a feature to a cause that is not the true one. It calls for extensive experience in the branch of work undertaken and for a knowledge of other workers' experience. Such is the substance of the matter contained in Lucas's book. It bears the stamp of having been written by one who has encountered the difficulties attending the work and who has overcome them. It is rich in the description of evidence to be adduced from observation and of methods by which such evidence may be revealed. It also gives timely warning of contingencies in which the evidence sought may be wanting through interference by accidental conditions as well as of the occasions when such evidence may be a false indication. The scope of the matter treated is extensive. It includes poisons, blood stains, effects traceable in clothing, counterfeit coinage, forged writing, and the reproduction of finger-print marks, and various matters connected with incendiarism firearms, and projectiles. The features of the book which render it so useful are the descriptions of manipulative detail.

Many Days in Morocco, by JOHN HORNE, is now published in a revised and enlarged edition (Philip Allan and Co., 12s. 6d.). The author describes the country as a strange mixture of North and South, East and West, Europe and Africa. Mosques have the pointed roofs of Europe in place of the gleaming domes of the East; minarets are square and thick instead of round and tapering; the multitude of storks' nests on pinnacle and tower seem more appropriate to Germany than to Africa. Morocco may well be called "the land of paradox." Mr. Horne weaves into the account of his own travels and adventures much interesting information on the history and customs of the people. He devotes one chapter to Xauen, a mountain stronghold on the edge of the Riff. Many of its inhabitants are descendants of the Moors who once overran the southern provinces of Spain, and the town still gives a faithful picture of what Moorish Granada must have been in the fifteenth century. In this new edition are included the author's impressions of modern developments of Morocco under French influence, beneath which the still waters of Islam continue to flow as deeply and mysteriously as in former days. The book is illustrated by excellent photographs.

In *Les Encéphalites Aiguës Post-infectieuses de l'Enfance* (Paris, Masson et Cie, 30 fr.) Mlle M. T. COMBY has chosen a subject to the knowledge of which her father, Dr. Jules Comby, the veteran Paris paediatrist, has made such valuable contributions. Her book forms one of the outstanding Paris theses of recent years. It is divided into six chapters devoted respectively to the historical aspects, detailed clinical description, primary diseases, morbid anatomy, aetiology and pathogenesis, and diagnosis, prognosis, and treatment. Brief histories of forty-five cases in patients aged from 2 months to 23 years are then recorded, followed by an extensive bibliography of a truly international character, including the most recent British literature. The work is an excellent contribution to the literature of the subject.

The Animal's World, by Professor DORIS MACKINNON (G. Bell and Sons, 7s. 6d.) is an expansion and modification of a course of popular broadcast talks on biology in which she participated. The book is written primarily for children, and it is obvious that the author thoroughly understands the mentality of the modern child. The somewhat patronizing attitude from which omniscient grown-ups write the majority of children's books is refreshingly absent. Instead one has the impression of a peculiarly wise and instructed child telling, in simple and straightforward language, an interesting story to her fellows. Since the author is herself a zoologist, and as she believes that the study of animal life offers the easier approach to biology, the greater part of the book is devoted to this aspect of the science. Outlines of anatomy and physiology are pleasantly mingled with the economic and sociological sides of the animal world. So full and varied is the information in this book that adults, as well as children, will derive pleasure and profit from reading it, and middle-aged doctors will regret that they did not receive their introduction to biology in such palatable form. The book is profusely illustrated with photographs and diagrams, all of which are apposite.

Dr. HALLIDAY SUTHERLAND'S *In My Path* (Geoffrey Bles, 10s. 6d.) is not such a good book as either *Arches of the Years* or *A Time to Keep,* but no author can be expected to maintain the highest standard indefinitely. In the present volume, borrowing a metaphor from the kitchen, the food is good, and the cooking is good, but the choice of dishes results in a rather indigestible meal. The transitions from light to serious themes are almost uncomfortably abrupt. The opening chapters, with their personal reminiscences, are in the author's happiest vein. Some strange experiences befell him as a temporary naval surgeon during the war, and there is a masterly description of a secret necropsy on a case of miliary tuberculosis. Two subsequent chapters are devoted to the tubercle bacillus and the story of tuberculin, subjects on which Dr. Sutherland is well qualified to write. There follows a vivid tale of a rejuvenation operation, which points a moral; a scathing and humorous commentary on modern life, entitled "The Woes of the Rich"; and a fantasy, reminiscent of Aldous Huxley, representing life in London in some future century under a nightmare multiplication of bureaucratic control. This is a satisfactory book for the busy doctor who has only odd half-hours for reading, since each chapter is complete in itself.

Preparations and Appliances

A FLEXIBLE GASTROSCOPE

Mr. KENNETH HERITAGE, M.S., F.R.C.S. (London, W.1), writes: Using a new optical system devised by Gunther Loeck an entirely new flexible gastroscope has been constructed for which the following advantages are claimed: (1) a greater degree of flexibility than that hitherto achieved without loss of image; (2) the flexibility is graduated; (3) the distal or gastric end can be easily deflected by contact with resistance—the instrument can therefore follow the curve of the stomach with greater ease and the pylorus can be approached more closely; (4) the instrument may be bent in a slight double curve, as shown in the illustration, without loss of image; (5) this new optical system is constructed to transmit the greatest possible amount of light; this is apparent from the size of the exit pupil.

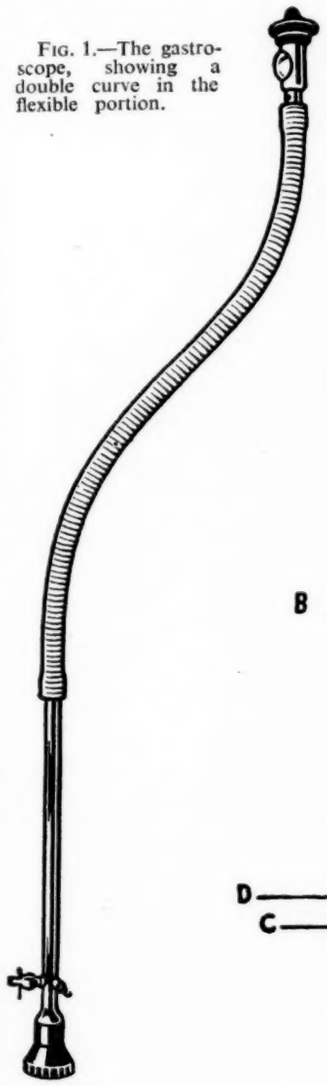

FIG. 1.—The gastroscope, showing a double curve in the flexible portion.

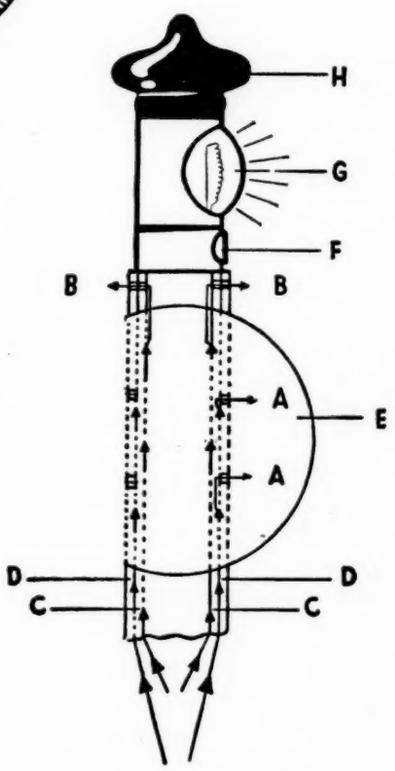

FIG. 2.—Diagram showing the distal or gastric end of the instrument. A = apertures for air to balloon; B = apertures for air to stomach; C = first rubber tube; D = outside rubber tube; E = inflated balloon; F = viewing window; G = lamp; H = rubber tip.

The optical system consists of numerous lenses in close succession, in which the diameter of the image is first reduced to a much smaller size than the diameter of the lenses. This tiny image is reproduced by certain reversals, and continues in this reduced form through the flexible portion of the instrument until it is ultimately enlarged for visual inspection. This optical construction reproduces a picture that is actually "swimming" in a larger "light circle." The light thus transmitted is of sufficient magnitude to be adequate for all purposes both when the instrument is flexed and when close proximity to the object results in great magnification. A circular picture is obtained even when a double bend in opposite directions is present.

The gastroscope has an overall length of 750 mm. with a diameter of 11 mm. corresponding to a size of 33 Charrière. The flexible part consists of a specially constructed tube graduated in flexibility so that the distal part of the tube is the most pliable part. This extremity carries the viewing window, the lamp, and a large rubber tip to act as a buffer facilitating introduction and to protect the window from oesophageal mucus. Using a plane viewing window an angle of vision of 90 degrees is obtained. When fully flexed the viewing window subtends an angle of 75 degrees with the rigid portion of the shaft. Thus a very wide range of deviation is compatible with good vision. At a distance of 10 cm. the magnification is × 1. On the proximal side of the viewing window a rubber balloon is incorporated. This is inflatable after passage of the instrument, and serves to lift the viewing window from contact with the lesser curve or cardia and so give a view which would otherwise be difficult.

The experimental work and the construction of the instrument have been carried out by the British Cystoscope Company, London, E.C.1.

MILTON ANTISEPTIC FLUID

Milton antiseptic fluid has long been known as an effective and convenient preparation suitable for a wide variety of uses. The manufacturers have issued a series of leaflets describing the antiseptic properties of milton. These include reports from their own laboratories on its chemical composition and bactericidal potency, together with independent reports prepared by various authorities. These deal with problems such as the action of the fluid on dentures and its efficacy as a disinfectant mouth-wash. Milton Proprietary Ltd. have also succeeded in incorporating milton fluid in an ointment, a difficult pharmaceutical achievement which, they state, occupied five years of research work.

CALCIUM ASPIRIN

Stabilized calcium aspirin (genasprin brand of calcium acetylsalicylate) represents a triumph over considerable pharmaceutical difficulties. Calcium acetylsalicylate was found to possess certain important therapeutic advantages over acetylsalicylic acid, but unfortunately it proved very difficult to prepare in a stable condition, and instability resulted in the liberation of free acetic and salicylic acids. The manufacturers (Genatosan Ltd., Loughborough) have now succeeded in preparing the drug in a stable form and also in producing it in tablets. The numerous therapeutic uses of calcium aspirin are described in a pamphlet prepared by the manufacturers.

"STREPTOCIDE"

Streptocide (Evans Sons Lescher and Webb Ltd.) is a preparation of *p*-aminobenzenesulphonamide. Its history is as follows. After many decades of fruitless research the compound named prontosil was discovered to produce a bactericidal action when given by mouth and to be an efficient curative agent in streptococcal septicaemia. This important chemotherapeutic advance has since been the subject of intensive research. The clinical value of prontosil has been established, but it has been proved that the drug is broken down in the body to a simpler compound—namely, *p*-aminobenzenesulphonamide—and the actions of this substance are now being investigated.

The preliminary reports are encouraging, but Messrs. Evans Sons Lescher and Webb, in the brochure accompanying their product, point out that the use of *p*-aminobenzenesulphonamide is still in its infancy and that the evidence regarding its action is still incomplete. Fortunately, however, the compound has a remarkably low toxicity. For example, in a 20-gramme mouse protective effects are produced by repeated doses of 2 mg., and the lethal dose is about 100 mg. Streptocide is of chief value in the prevention and cure of infection with haemolytic streptococci. These organisms are responsible for a remarkably wide variety of human diseases, and the drug is recommended as a prophylactic against puerperal septicaemia and for the prevention of complications of scarlet fever, streptococcal tonsillitis, measles, etc. The dose recommended is four tablets (0.25 gramme each) by mouth three times a day.

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TENDENCIES OF CONTEMPORARY MEDICINE

We are living in an epoch of profound transformations, which challenge the established order in which we have been brought up and even call in question matters which in our pride we had regarded as fixed and assured. These changes show the relativity of our points of view and our conceptions. The state of flux shows up in all domains—economic, political, social, scientific, and philosophic. A revision of values, a readaptation, is demanded on all sides. At the end of the last century men put material things first; they looked at the things of life from outside, ignoring often the human values. Now there is a growing sense of the needs of man and study of his reactions to his surroundings. It is not possible to separate the future of medicine from this new humanism.

In a subject of such comparatively recent origin as scientific medicine we must expect growing pains, and in his essay on the tendencies of modern medicine Dr. Delore[1] of Lyons suggests that one of these crises is upon us. He accepts Professor Harvey Cushing's description of medicine as at the cross-roads. Medicine of the nineteenth century and even of to-day is predominantly, almost exclusively, analytical. This has occurred because all the ancillary sciences in the training of the medical student are in essence analytical. The spirit of the laboratory has tended to supplant the clinical sense. Each problem is tackled as an entity. This method leads only to erudition, the accumulation of isolated facts; and the broad general principles, the science, and the plan are left in abeyance. Further, there is separation of man into mind and body, of man from his surroundings. Delore sees as consequences of this attitude a predominance of the morphological sciences, an increase of specialization to the detriment of general culture, materialism, and, more particularly, a one-sided view of the problems of infection and immunity, emphasizing the role of the infecting agent and neglecting the equally important reactions of the host. The tendency has been to accumulate material, and this is useless unless subjected to a succeeding process of synthesis. Medicine should become more human, treating the whole man as one psycho-physical complex. Medicine in future must serve the man, whether thinking, working, or suffering. Medicine thus interested in the study of the person must turn more and more to consider the disturbance of function. This point of view is developed on philosophical lines by von Bergmann in a book reviewed at page 74 this week. The accurate knowledge of the first change in function, the real onset of the disease, leads to an earlier diagnosis in the pre-clinical stage. Thus preventive medicine must be for the individual not only preventive but abortive.

The remarkable advances in the science of bacteriology during the last fifty years have led to neglect of the diseased person, the terrain. But there is need to return to Claude Bernard, who taught that the microbe is nothing, it is the terrain that is all. Of the two factors in disease it is the terrain, the soil, the reacting capacity of the individual, which is the more important; it is this which controls the morbid reaction. Taking as examples of morbid processes cancer, tuberculosis, and infectious diseases, not only because of their importance in pathology but because they give striking instances in his argument, Delore notes in cancer the fundamental role of the terrain or soil; there is lack of specificity of the exciting or occasional factors. In tuberculosis both the bacilli and the terrain are of importance. In the infectious diseases the terrain intervenes least; the external agent appears to have the preponderating part. But even here there is over-emphasis of the part played by the infecting bacteria. Often there is an absence of contagion; epidemics vary in character in a way inexplicable on strictly bacteriological lines; very often the microbe is latent and the disease sets in unexpectedly; in many infections no determined microbe is found, and filterable viruses are postulated; there is much mutability and pleomorphism of bacterial agents. All points to need for considering the terrain or soil. In tuberculosis the real acquisitions in therapy are outside the domain of bacteriology. The revival of the age-old triad, rest, fresh air, good food, is directed not against the microbe but to aid the general state. The method of artificial pneumothorax is a clinical acquisition.

It is thus that Delore is brought to the position that the future medicine is the treatment of the patient with physical and psychological measures. These measures may be simple: dieting, fasting, physical therapy and exercise, the treatment with drugs in the optimal, even minimal, therapeutic doses. They are the revival of the lessons of clinical experience. To assure the diagnosis, determining the pathological lesions to be verified post

[1] *Tendances de la Médecine Contemporaine. La Médecine à la Croisée des Chemins.* By P. Delore. Paris: Masson et Cie. 27 fr.

mortem was too much the aim of recent medicine, as if treatment were only a concession to the demands and prejudices of the public. In future use must be made of all the lessons of empiricism; even methods at present outside the pale of classical therapeutics are to be explored, and if found helpful brought into use. There is to be a revival of research into methods of treatment, and collaboration between teachers of medicine and surgery and the staffs of the hospital services, with veterinarians, with the health officers and family physicians. The author urges the foundation of an institute of therapeutics which shall control and investigate not only the traditional and empirical measures but even explore what is valuable in charlatanism. Amid much overstatement Delore has produced a stimulating book, one that deserves consideration because of its enthusiasm for the progress of medicine and the good of mankind. His underlying hope is to bring about a synthesis which will advance the science of man.

THERAPIA STERILISANS MAGNA

Sterilization of the blood stream by chemical means has been looked upon more and more as an unattainable ideal. Many procedures undertaken with this object in the not far distant past are now recognized to have been futile. Indeed it is difficult to account for the optimism which allowed the intravenous injection of eusol, and although salts and compounds of mercury are not quite so obviously unsuited to this use abundant proof has been available for years that they are powerless to kill bacteria under such conditions. These are by no means the only supposed remedies for septicaemia which have "had their day and ceased to be," and hence there must have been reservations in many minds when it was announced last year that a dye compound synthesized in the Bayer laboratories had been found bactericidal for haemolytic streptococci *in vivo*.[1] The earlier phases of work with prontosil have been described in these columns,[2] and we need only recall here that the compound was found by a number of workers to be capable of curing experimental streptococcal infection in mice, although its bactericidal action *in vivo* was negligible; its mode of action was therefore unexplained. A steady stream of clinical reports, mainly from Germany but including one of considerable weight from this country, also testified to its efficacy in the human subject. Two further papers which have now appeared carry this research an important stage further. Colebrook and Kenny[3] add to their previous series of cases of puerperal sepsis a further twenty-six treated by prontosil with not a single death, although six were septicaemic. A more striking tribute to the value of this form of treatment is not conceivable, and the fact that the mortality of the disease shows signs of a spontaneous decline, although interesting and welcome in itself in so far as it can be accepted as true, does not invalidate the obvious conclusion from so notable a success. The investigations of Colebrook, Buttle, and O'Meara[4] are of equal interest from a different standpoint, in that they promise to transfer this treatment from a purely empirical to a rational basis.

It was suggested some time ago by Tréfouel, Nitti, and Bovet[5] that prontosil does not act in the body as such, but is converted into another compound, para-amidobenzene sulphonamide.[6] Buttle and his colleagues, acting on this assumption, have found that this compound has unique bactericidal properties, being capable in enormous dilution of killing streptococci in blood, provided that the number of bacteria in the mixture is small, as, of course, it is in the clinical condition of septicaemia. We believe this to be the first occasion on which any germicide has been proved capable of killing bacteria in blood in a concentration attainable in the blood of a patient. If the obvious interpretation of these experiments is accepted the forty-year-old ideal of "therapia sterilisans magna," so far from receding into the domain of medical mythology, has at one step taken its place as a concrete fact of daily practice. It remains to be seen whether "sulphonamide" possesses the therapeutic powers which these experiments and reasoning suggest; it may prove superior to prontosil itself, and it has the extraordinary feature in a remedy of this kind, and one which will encourage its free employment, of being administrable only by the mouth. It also remains for surgeons and physicians in this country, as well as obstetricians, to make their own observations on its value in the treatment of streptococcal infections in general. So far the studies of puerperal fever in the isolation wards of Queen Charlotte's Hospital have been the only reported attempts in England to evaluate this treatment on an adequate scale. Although the opportunities there are admittedly exceptional it should be possible elsewhere to study its effect on a sufficient series of cases of surgical sepsis; and throat infections, scarlatinal or otherwise, offer an abundance of clinical material. Lastly, there are indications that other bacteria may be susceptible to the action of this remedy. These certainly do not include either the pneumococcus or streptococci other than *S. pyogenes*, but reports of cures of

[1] *British Medical Journal*, 1936, **1**, 590.
[2] Ibid., 1936, **1**, 1216.
[3] *Lancet*, 1936, **2**, 1319.
[4] *Lancet*, 1936, **2**, 1323.
[5] *C. R. Soc. Biol.*, Paris, 1935, **120**, 756.
[6] Now marketed by Bayer Products Ltd. as prontosil album.

urinary infections open a new field which remains to be fully explored. Setting these further possibilities aside, it may be said that the promised value of this treatment in streptococcal infections alone bids fair to place it among the major therapeutic discoveries of modern times.

THE BART'S REPORTS

Volume 69 of *Saint Bartholomew's Hospital Reports*[1] contains numerous articles of interest to medical practitioners. Dr. E. R. Cullinan reviews a series of cases of subacute necrosis of the liver. The form of acute necrosis called acute yellow atrophy has long been recognized. Some cases are not fatal and may be called subacute, but apparently there is a similar underlying pathology; and at the other end of the series are cases usually called catarrhal jaundice. In some instances a recognizable causative factor is evident, and the most acute cases occur in pregnancy or after various poisons such as chloroform, mercury, arsenic, apiol. In many, however, the cause is not apparent, though an infection, possibly a virus, has been blamed. Jaundice, often recurrent, is in the forefront of the clinical picture, with enlargement of the liver and bile in the urine, though the stools are seldom clay-coloured. In severe cases haemorrhages and profound toxaemia may precede a fatal issue. The essential pathological process is diffuse necrosis of the parenchymal cells of the liver with subsequent collapse and fibrosis of the framework. After a time there is a period of repair and some regeneration of the liver may occur, which allows the functions of the liver to be carried on after the attack. In a large hospital with a casualty department patients with perforated gastric and duodenal ulcers may be admitted with all degrees of shock and peritonitis. A series of ninety-two consecutive cases of perforated gastric ulcer has been followed up by Mr. R. W. Raven. The immediate mortality of peptic ulcer was 23 per cent. as shown by this series, an improvement on the figures collected (38 per cent.) by Mr. Girling Ball for cases treated in the same hospital during the years 1901 to 1922. The immediate operative mortality in Mr. Raven's cases in perforated duodenal ulcer was 16.4 per cent., compared with a mortality of 29.8 per cent. in the series of cases of perforated gastric ulcer. The late results are encouraging: 82 per cent. of cases of perforated gastric ulcer which recovered from the operation remained in a satisfactory state of health, and 80 per cent. of the series of cases of perforated duodenal ulcer. In spite of the reduction in operative mortality which has occurred in recent years it is still high. It is to be hoped that a better understanding of the disease and its treatment will still further improve the prospects of patients. Partial gastrectomy as a method of treatment of peptic ulceration or of carcinoma of the stomach is an operation which has been increasingly practised by surgeons during the past fifteen years. It is a procedure which, whatever, its therapeutic advantages, still has a high primary mortality even in the hands of experienced surgeons. During the years 1919–31 the primary mortality of partial gastrectomy for peptic ulcer was 16.9 per cent., and for carcinoma of the stomach 25.5 per cent. at St. Bartholomew's. In an interesting analysis of the morbid anatomical findings in fifty-one patients dying as the result of partial gastrectomy, Dr. R. T. Payne finds that peritoneal and pulmonary infections were responsible for thirty-six of the deaths. Peritonitis, either local or general, brought about twenty of the deaths, and many of these were due to failure of response at the suture line rather than to technical error on the part of the surgeon. It is suggested that adequate investigation and adequate pre-operative preparation with elimination of unsuitable cases would materially reduce the high mortality. The sedimentation rate of red cells in citrated blood is a valuable guide in the prognosis of tuberculosis and arthritis. Dr. W. G. Oakley has extended the method to the investigation of seventy cases of acute and chronic nephritis. In the preliminary acute tonsillar infection the sedimentation rate is appreciably raised, but usually shows a rapid return to normal except where acute nephritis supervenes. The sedimentation rate appears to have no direct relation to the degree of proteinuria and to the urea-excreting function of the kidney, but is an index of the severity of the infection. The sedimentation rate is persistently raised in all forms of chronic active nephritis, especially in the presence of oedema. In the arteriosclerotic kidney the rate is normal or only slightly raised. Long and important papers are included on lymphadenoma and on the deep *x*-ray therapy of malignant disease. The volume also contains graceful references to the life and work of four distinguished Bart's men, Mr. W. T. Holmes Spicer, Dr. R. G. Canti, Sir Archibald Garrod, and Sir Wilmot Herringham.

[1] London: John Murray. (21s.)

THE ANATOMY OF PAIN

In a brief paper Professor H. H. Woollard[1] has recently published results of experiments which appear to demonstrate beyond question that the sensation of pain on skin surfaces arises by the stimulation of a system of fine non-medullated nerves lying in the most superficial part of the dermis. The non-medullated nerves do not end in "organized" nerve endings such as Meissner's corpuscles, but terminate either as closed loops lying in a plane parallel to that of the skin or as long naked neurofibrillae. Only rarely do fibrils penetrate into the epidermis, which is thus essentially an organ of touch. The structure of the pain nerve endings explains the reason for the poorly localized sensation of pain. Pain in the deeper regions of the dermis is attributed to the stimulation of (1) the fine accessory fibres which are seen in relation to the more organized nerve endings such as the corpuscles of Pacini and Meissner and Krause end-bulbs, and (2) fine terminal fibres similar to those in the superficial layer of the dermis.

[1] *J. Anat.*, Lond., 1936, **71**, 54.

GAS HEATING IN FLUELESS ROOMS

A useful piece of work has been done by an advisory committee appointed by the Royal College of Physicians of London to consider the question of domestic heating by gas. This is a controversial subject as well as one of great public importance, and although no doubt the gas industry itself could have carried out an equally impartial and scientific investigation it could hardly have avoided the suspicion of bias in other quarters. This country is fortunate in having institutions of unchallengable impartiality and authority which are willing to undertake inquiries into subjects of great interest to the community, but not exactly within the compass of departmental committees. In well-ventilated rooms long experience has shown that gas is a harmless and convenient fuel, but the case may be different in rooms in which ventilation is defective. Unfortunately many of the new flats and housing estates which appear like magic on the suburban landscape contain at least one flueless room in each dwelling. This room is used as a spare bedroom, or perhaps as a second sitting-room, and warmed by gas or electricity. The outstanding feature in the report of the advisory committee[1] is an interim condemnation of the flueless room—interim because it is admitted that the problem of ventilation of rooms in ordinary conditions of occupation has never been thoroughly investigated, and until there is evidence that satisfactory ventilation can be otherwise obtained the committee feels itself bound to recommend that wherever possible living-rooms and bedrooms should be provided with flues. Surprise is expressed that in view of the great importance of air change so little precise knowledge is available on the subject of domestic ventilation. It is certainly most desirable that extended tests should be carried out on rooms in which the only means of inlet of fresh air and escape of foul is by the opening of door or window. This, by the way, is a matter at present under consideration by the Health Organization of the League of Nations. The temperature and degree of movement of air in dwelling houses, and secondarily the humidity of the air and the temperature of the surroundings, are the principal factors to be considered, in the committee's view, and the changes in the chemical composition of the air in conditions of normal occupation appear to be, within limits, of little consequence. But in view of the criticisms of flueless gas heaters, the effects on comfort and health of varying amounts of the products of combustion of coal gas have been studied in detail. In our issue of December 26 (p. 1328) there appeared a summary of the investigations, and the limits were stated which, in the view of the committee, the products of combustion—carbon monoxide and sulphur and nitrogen oxides—should not exceed. Another point to which the committee gave attention is the possibility, often mooted, of a chronic form of carbon monoxide poisoning. The conclusion reached is that there is no evidence of any definite group of symptoms pointing to such a condition. While exposure to very small quantities of carbon monoxide may be capable of causing disagreeable effects, at any rate in some people, during the period of exposure, the available evidence is unconvincing as to the occurrence of any definite group of symptoms which would indicate a chronic form of carbon monoxide poisoning. It is interesting to contrast with this finding some work by H. G. Beck in the United States which was the subject of a note in our last issue (p. 27). Evidently there is still a problem to be elucidated. With regard to the oxides of sulphur, small quantities of which are produced in the normal combustion of coal gas, the important thing, in the committee's view, is the objectionable smell and not their effect upon health, and the limit of concentration laid down in the report is at a level at which these oxides would be imperceptible to smell. It is believed that smell would be perceptible before any irritation of the respiratory tract was produced. But smell is a sense which varies within wider limits than any other among human beings, and is the sense peculiarly susceptible to adaptation—that is, of diminution or cessation of sensation in spite of the continuance of the stimulus. The committee's report will be of great value to the gas industry.

[1] Royal College of Physicians of London. Domestic Heating by Gas Considered from the Point of View of Health and Comfort. London: Harrison and Sons, Ltd. (1s., post free 1s. 2d.)

TUBERCULOUS MENINGITIS OF BOVINE ORIGIN

Despite the incontrovertible evidence of many observers that infection by the bovine tubercle bacillus can be virulent for human beings, there is still some scepticism, particularly among farmers. A recent communication before the French Academy of Medicine[1] was concerned with an analysis of the type of organism present in 130 examples of tuberculous meningitis studied at the Trousseau Hospital between the years 1932 and 1936. Culture from the cerebro-spinal fluid on Loewenstein's medium was made in each case, and 121 cultures were of the human type and nine of the bovine type. Animal inoculation was used to confirm the cultural characteristics of these bovine cultures. This proportion is similar to that described in other countries, but an interesting point which came out in a further analysis of the case records was that of the nine children dying from their bovine infection all had been brought up in the country and eight were known to have been given raw cow's milk for the greater part of their lives. In the remaining case raw cow's milk had also been taken: the father was also stated to be suffering from pulmonary tuberculosis, which introduces an element of doubt. Of the 121 human cases only 10 per cent. came from the country, and there was clearly a human source of infection in most of the cases. It was pointed out in the discussion that fatal bovine infection in country districts might well reach a higher incidence than these figures suggest, despite the usual custom in France of boiling all milk. The figures here given are not large compared with those available in other countries, but the subject has been little studied in France from this aspect. The communication, however, serves to clinch the case against raw milk for children in any part of the world.

[1] *Bull. Acad. Méd. Paris*, November 17, 1936, p. 373.

A UVEAL SYNDROME

Of late years a growing number of cases have been reported in which uveitis is associated with changes in the pigmentation of the skin and hair, and also with affection of hearing. The uveitis itself is so severe as to resemble the reaction seen in sympathetic ophthalmia. The pigmentary changes of the hair are most evident in the eyelashes, which become grey, though any hairy region may be involved, and in extreme cases there is alopecia. The skin shows a varying degree of vitiligo, and the auditory affection is generally of the nature of a transitory middle-ear catarrh. The older literature abounds in observations which seem to indicate a partial recognition of this syndrome. Thus Nettleship in 1884 reported depigmentation of the eyelashes in a case of sympathetic ophthalmia and referred to an earlier case of Hutchinson's in which a severe plastic uveitis of non-traumatic origin was accompanied by changes in the eyelashes. The occurrence of alopecia, poliosis, and dysacousia was reported in sympathetic ophthalmia by Cramer in 1914, but what is of interest in the more recent cases is the presence of this symptom-complex in uveitis not of sympathetic origin. How far these changes constitute a clear-cut syndrome it is difficult to decide, as some of the components of the syndrome have been observed in ocular affections other than the severe uveitis described above. Thus poliosis has been noted in trigeminal neuralgia and in bilateral iridocyclitis, and vitiligo has been observed in optic neuritis. It would, however, seem that even in such cases uveitis has been present in one form or other, and these observations may well have been instances of partial recognition of the syndrome. As things stand at present the feature that is stressed by recent observers such as B. Rones,[1] W. S. Davies,[2] and T. H. Luo,[3] is the extreme severity of the ocular affection—the reaction resembling sympathetic ophthalmia—and the complete absence of any definite aetiological factor. No clearly established case of this syndrome appears as yet to have been reported in this country, and although there are several reports from America, most of the forty odd cases recorded have been in Japan. To what extent pigmentation of the skin and of the fundus background are factors in this particular reaction is again a matter of difficulty; some of the American reports refer to negroes, and albinotic fundi are features in other cases.

CARDIAC ISCHAEMIA

A special lecture on "The Treatment of Cardiac Ischaemia" will be delivered by Mr. Laurence O'Shaughnessy in the theatre of the Royal College of Surgeons of England, Lincoln's Inn Fields, W.C., on Friday, January 15, at 5 p.m. The lecture will be in two parts: (1) Experimental methods of initiating and supplementing natural reparative processes in coronary thrombosis and coronary sclerosis. The provision of an additional blood supply to the heart by grafts of living tissue. (2) Cardio-omentopexy in man. Operative technique and the case records of the first patients to be treated in this way. Viscount Dawson of Penn, President of the Royal College of Physicians of London, will give a short introductory address.

[1] *Arch. Ophthal.*, Chicago, 1932, **7**, 847.
[2] Ibid., 1935, **14**, 239.
[3] *Chin. med. J.*, 1936, **50**, 1409.

FACIAL CELLULITIS

The greater part of the face, in common with the subaponeurotic area of the scalp, constitutes a "dangerous area" from which infection is apt to extend intracranially by way of the venous channels. A report on the study of fifty cases of facial cellulitis by P. Chatterji and M. N. De of Calcutta[1] is a useful contribution to the subject. It is probable that owing to a sodden epithelium from excessive sweating facial cellulitis is commoner in India than in this country. The authors point out that constant perspiration keeps the skin surface always moist, and unless this is kept scrupulously clean crops of furuncles tend to occur. Clinically the majority of cases of facial cellulitis show signs of toxaemia and septicaemia, and the prognosis is grave; forty-four of the fifty cases studied by Chatterji and De ended fatally. Organisms were grown from the blood of thirty-nine of the forty-six patients from whom blood cultures were made, and *Staphylococcus aureus* was found in thirty-two and streptococci or mixed infections in seven. The authors believe that too much importance has been attributed to the possibility of intracranial extension—that is, cavernous sinus thrombosis—and too little to the fact that a septicaemia or pyaemia may be established early and death take place long before the cavernous sinus is thrombosed. For this reason, and because after occlusion of the angular vein it is still possible for infection to spread to the cavernous sinus by way of the pterygoid plexus, ligation of the angular vein as a prophylactic measure would not in the majority of cases seem to be indicated. This is sound argument; and an incision necessary for ligating the angular vein may spread the infection. Chatterji and De believe that attention should be concentrated on the treatment of septicaemia with its accompanying toxaemia. Active measures applied to the lesion itself, such as incisions, scraping, squeezing, and handling of any kind, are only too apt to spread the infection and are to be condemned. This is in accord with experience of cases of furuncles and carbuncles in the "dangerous area" of the face. Treatment should be directed to the general condition, with only gentle local therapy in the form of hot fomentations and the application of magnesium sulphate paste. The tendency to-day is to treat all furuncles conservatively and to allow these lesions to discharge spontaneously when the local defensive mechanism and the development of the lesion have reached the optimum point. Meddlesome incisions are painful and dangerous, and produce more conspicuous scars than those resulting from spontaneous evacuation.

[1] *Indian med. Gaz.*, 1936, **71**, 629.

NECROPSY AFTER ROAD ACCIDENTS

The great increase of motor accidents has brought with it a need for accurate statistics of causation. Professor E. Martin and Drs. Péchoux and Hamdy[1] point out that an indispensable component of these statistics is the results of necropsy on the victims. Public attention, thanks largely to the attitude taken by many periodicals, has been mostly directed to the motorist, and very little thought has been given to the possible contribution of the pedestrian or cyclist to the accident. Widmark has given figures showing a large incidence of drunkenness in victims of motor accidents, and the French authors point out a possible cause which seems hardly ever to be taken into account: defects of sight, hearing, and attention. Many victims, they say, suffer from some condition which contributes even more to their death than the impact of the collision. By way of example they cite the case of an elderly woman who died three days after a motor accident. She had a large long-standing perforation of the left ear-drum, and the right auditory meatus was completely closed by an enormous plug of impacted wax; she must have been almost completely deaf. A man of 62 who was knocked down by a tram had an opacity of the left cornea and a right-sided cataract; both his ears were plugged with impacted wax. Out of sixty-two victims who came to examination, two old men had very fragile arteries, two had diseased lungs, one was in such a bad state of general health that a very slight injury would have been fatal, and another died of appendicitis which flared up because of the injury. They recommend that the stomach contents and the blood in the heart cavities of persons who are brought in dead or die soon after admission should be examined for alcohol, and suggest that this is a common finding. In this country the question of whether or not to hold a necropsy on the victim of a road accident is left to the discretion of the coroner. To make an invariable rule that a necropsy must be done in these cases would throw a heavy burden upon public funds. Nevertheless there is a good deal to be said for it, and perhaps still more for enacting, in any new legislation dealing with coroners' courts, a provision obliging the coroner, at the instance of any person who might thereafter be held liable for the accident, to direct that a post-mortem examination be held, and placing the pathologist's report at the disposal of the court and either party.

B.C.G. VACCINATION OF INFANTS

Although B.C.G. vaccination of children was introduced in 1924 it is only within the past few years that carefully controlled experiments have been made to ascertain its real value. One of the most important of these is that carried out during the past eight years in New York by Kereszturi and Park.[2] The experience of these workers on a total of 690 vaccinated infants and children, all of whom were born into tuberculous families, indicates that the vaccine is harmless for human beings, though when administered parenterally it not infrequently gives rise to a cold abscess that may persist for several months. These 690 children were divided into two groups. One group, comprising 269 infants, were vaccinated by the oral route during the first ten days of life. The other group, comprising 421 infants and children, most of whom were less than 1 year of age, were vaccinated either intracutaneously or subcutaneously; all of these were shown to be tuberculin-negative when they first came under observation. Control cases, 345 and 410 in number, were selected to correspond as closely as possible with the subjects in the two vaccinated groups. The children have been followed up with great diligence, and the results are now presented. The tuberculosis death rate in the orally vaccinated group was 1.1 per cent., in the control group 2.6 per cent.; in the parenterally vaccinated group it was 0.7 per cent., and in the control group 2.7 per cent. Combining these two groups, the tuberculosis death rate was 0.9 per cent. in the vaccinated as compared with 2.7 per cent. in the control group. Analysis of these figures showed that the observed difference of 1.8 per cent. was 3.9 times the probable error—a difference that might be expected to occur by chance alone less than one in a hundred times. Although the control subjects were on the whole exposed rather more frequently than the vaccinated to contact with open tuberculosis, reasons are advanced to show that this was not likely to account for the difference in behaviour of the two groups. Discussing these results, the authors point out that the tuberculosis death rate in children of tuberculous families in New York City is 2.7 per cent. during the first year of life, while in the general population it is only 0.06 per cent. In the children of "open" tuberculous families it is 7.2 per cent.—that is, 120 times as high as in the general population. In their opinion this mortality is serious enough to justify the routine vaccination—preferably by the parenteral method—of all children born into tuberculous families. The data now provided suggest that by this means the tuberculosis death rate could be reduced to one-quarter of its present figure. By combining B.C.G. vaccination with removal of the infants from their parents until allergy had become established, it might be possible to effect an even greater reduction.

[1] *J. Méd. Lyon*, 1936, **17**, 735.
[2] *Amer. Rev. Tuberc.*, October, 1936, p. 437.

THE HALF-YEARLY INDEXES

The usual half-yearly indexes to the *Journal* and to the *Supplement* and *Epitome* have been prepared and will be ready shortly; they will, however, not be issued with all copies of the *Journal*, but only to those readers who ask for them. Any member or subscriber who desires to have one or all of the indexes can obtain what he wants, post free, by sending a post-card notifying his desire to the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1.

We regret to announce the death in London of Dr. David Fraser-Harris, formerly professor of physiology in Dalhousie University, Nova Scotia.

ENDOCRINES IN THEORY AND PRACTICE

This article is one of a series on Endocrinology contributed by invitation

CLINICAL ASPECTS OF HYPERTHYROIDISM

BY

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AND

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Hyperthyroidism or toxic goitre may arise in a patient who has shown no signs of thyroid disease previously or in one who for many years has had a simple goitre. It is more common in females than in males and may occur at any age, but the incidence is greatest in women in the third decade and at the time of the menopause.

Course of Disease

The disease is usually chronic, partial remissions and periods of increased activity alternating irregularly; rarely the course is short, the condition lasting for a few months and ending in spontaneous recovery. The initial attack or any relapse may be so severe as to cause death, and, if the condition is chronic, auricular fibrillation and congestive heart failure or mental disturbances are likely to develop eventually.

Aetiology

The cause is unknown, but infections such as influenza or acute tonsillitis, psychic stresses such as emotional shocks and financial or family worries, and events of the sex life such as adolescence and the menopause, are so frequently associated with the onset or a relapse that they are regarded as exciting causes. In many cases no exciting cause can be found. A constitutional factor also is probable.

Clinical Picture and Diagnosis

The clinical picture is extremely variable. The symptoms and signs include enlargement of the thyroid gland, muscular weakness, mental irritability, physical and mental restlessness, tremor, palpitation and tachycardia, excessive flushing and sweating, loss of weight, and eye signs of which the most striking are exophthalmos and widening of the palpebral fissures. All or only a few of these disturbances may be present, and any one of them may be absent. The most constant departure from the normal is the increased rate of basal metabolism, but in mild cases the figures are difficult to assess, and when the increase is definite the clinical features are usually well marked. The estimation of the basal metabolic rate is therefore unnecessary for diagnosis.

The typical clinical picture of exophthalmic goitre in which all the symptoms and signs are present is most frequently seen in women during the child-bearing age; in older patients, and when the condition arises in the course of a long-standing simple goitre, the signs may be few and the picture may be predominantly that of a functional failure of some organ such as the heart or of the mental faculties. When auricular fibrillation results in an elderly patient the signs and symptoms of congestive heart failure may be so pronounced that the underlying cause is missed, a slight enlargement of the thyroid gland and an absence of any other cause for the cardiac irregularity being the only clues to the diagnosis. If a thyroid origin is considered, however, other evidence is usually forthcoming in a slight widening of the palpebral fissures, tremor, or a history of goitre, simple or toxic, earlier in life.

A mild degree of hyperthyroidism is sometimes seen in patients who have suffered for years from neurasthenia and indefinite symptoms of ill-health. A slight enlargement of the gland and the nervous manifestations of hyperthyroidism are present, with or without tachycardia, and as a rule no loss of weight. This is an important group, for the thyroid disturbance is but a part of a more general departure from health which has existed for some time. It is of great importance to assess accurately the part that the thyroid gland is contributing to the disability, for treatment directed to the thyroid alone will give disappointing results, and thyroidectomy may make the condition worse and give rise to mental depression, rendering the life of the patient more unhappy than before.

Condition of the Gland

In the absence of previous disease of the thyroid gland the enlargement is characteristically moderate or slight and affects the gland diffusely. Sometimes it affects the isthmus or one lobe or a portion of a lobe more than the rest of the gland, but the whole is involved. It is firm but not hard, and the surface may not be quite smooth, slight palpable irregularities being due to exaggeration of the normal lobulation. In severe and early cases excessive vascularity is recognized by a palpable thrill and loud systolic murmur. In cases of some duration, or after the administration of iodine, the excessive vascularity disappears and the gland becomes harder and more irregular. If the disease arises in a case of long-standing colloid or simple nodular goitre the gland may be large and irregular. The gross irregularities are due to involution nodules; rarely a "foetal adenoma," usually single, is associated with hyperthyroidism. In older patients it may occasionally prove difficult to determine any enlargement of the gland, which is small and fibrous, but on surgical exposure it is always found to be larger than clinical examination disclosed.

Muscular Weakness and Tremor

Muscular weakness and excessive fatigue on exertion are probably the most constant symptoms. Mental restlessness is usually the symptom first noted by relatives, and is characterized by excessive mental energy and irritability, with periods of depression. The tremor is best seen in the outstretched fingers, and is typically fine and irregular. It may be present also in the lips and tongue, and, in severe cases, affects all the muscles of the body. It may be coarser and more obviously irregular. In many patients there is a physical restlessness so that they cannot sit still and are continually altering the position of their limbs.

State of the Heart

The cardiovascular system is characteristically affected, and the dangers to efficiency and to life are mainly due to this. Palpitation may be the earliest symptom, and in

severe cases is present even at rest, but in milder cases is noticed on slight exertion or emotional disturbances. Sensations of heat that may be accompanied by a visible flush are complained of by the younger patients especially, and though most marked in the face, neck, and upper thorax may be accompanied by an uncomfortable feeling of heat throughout the body. The cardiac impulse is forcible, and suggests a vigorous and rapid action of the heart. It may be palpable all over the praecordium. The apical impulse is diffuse, and can be felt outside the normal position even in the absence of cardiac enlargement. In severe or long-standing cases slight cardiac enlargement occurs, but if marked is indicative of some complicating factor such as hypertension or a valvular lesion. The heart sounds are loud and sharp, and systolic murmurs at the apex and base are usual. The rate of the heart is rapid and varies with the severity of the disease, rising to 180 per minute or over; but more commonly rates of 100 to 120 per minute are found.

The heart's action is usually regular, but if the disease is very severe in younger patients, or even if only mild in the older, auricular fibrillation is likely to arise. With the onset of auricular fibrillation congestive heart failure results and life is endangered. Previous to the onset of established fibrillation, paroxysms of auricular fibrillation or of auricular flutter, and extrasystoles, may occur. The systolic blood pressure is usually raised and the diastolic normal, so that the pulse pressure is increased.

Loss of Weight and Other Signs

The body weight and the rate of change in weight are valuable guides to the severity of the disease and to its activity. So long as loss of weight continues the disease is active; cessation of loss and commencement of gain are indications of a remission. In severe cases the loss of weight is rapid and striking, several stones being lost in a few months. In milder cases there may be no loss of weight at any time, but those patients who show some of the signs of the disease but are persistently overweight must be carefully considered, for in them the thyroid disturbance is not, as a rule, the only cause of their ill-health.

Exophthalmos may be absent in the younger as well as in the older patients, but in the latter is more often slight in degree. It is usually bilateral, but is frequently more marked on one side. It may be so extreme as to dislocate the eyeball. It may vary in degree from day to day, but when established is the most persistent sign of the disease, often remaining when recovery is otherwise complete. Even when no proptosis can be demonstrated the eyes appear to stare abnormally. This is due to retraction of the upper lid, which is the most common of the eye signs. Excessive lachrymation contributes to the shining appearance of the eyes; other eye signs that may be present are infrequency of blinking, lack of wrinkling of the forehead on looking upward, lagging of the upper eyelids when the eyes are turned downwards, and difficulty of convergence on looking at a near object.

Glycosuria is common at some time in the course of the disease, but there is no elevation in the value of the fasting blood sugar; it is not indicative of diabetes mellitus, disappearing with recovery from the thyroid disease. Diabetes mellitus may be present in addition to hyperthyroidism, but not more frequently than in any other group of patients.

Medical Treatment

The disease may subside and recovery be complete on medical treatment alone. Even if surgical treatment is required the safest time in which to operate is when the activity of the disease has subsided and a remission is established. The object of medical treatment is therefore to bring about a remission, and such treatment should be carried out even if the need for surgical treatment in addition is clear.

Rest.—Rest is the most efficient method of treatment, and it must be physiological as well as physical rest, and rest for the mind as well as for the body. This should, as a rule, be carried out in a hospital or nursing home, not only because of possible exciting causes due to incompatabilities and worries in relation to the home or relatives, but also because the mental unrest and irritability that result from the disease have usually been productive of friction and irritations even if these were absent before the onset. Complete rest in bed is desirable at first in all cases. It may have to be continued for weeks or months in the severe cases and in those with congestive heart failure, but in the milder cases should be relaxed after a few days or weeks, since its continuance unduly may be productive of "unrest," both physical and mental. The surroundings must be cheerful and the nurses and attendants agreeable.

Diet.—In view of the increased metabolism the diet should be a generous one, well balanced, and containing ample fresh food and vitamins. The appetite is usually good, and no difficulty is experienced in getting the patient to take sufficient nourishment, but in a few instances it is poor, and such patients require much skill and experience on the part of the nurses to get them to take enough food to enable the loss of weight to be checked. Sleep is usually good, but for the mental restlessness in the day-time it is advisable to give a sedative, and luminal in doses of half a grain (32 mg.) or 1 grain (64 mg.) two or three times a day is satisfactory. If hypnotics are necessary, chloral or paraldehyde is suitable.

Infections, especially of the teeth, tonsils, and sinuses, should be sought for, and the patient's business and domestic affairs explored for sources of worry.

Iodine.—Considerable improvement usually results from the rest and other measures. The tachycardia subsides, the nervousness and restlessness diminish, and an estimate of the severity of the condition is obtained. In some cases such measures alone suffice after one or two weeks to check the activity of the disease, and a remission sets in, with steady improvement and gain in weight. In many, however, the improvement is slight and temporary, and iodine should then be prescribed. This will produce a further improvement, and should be given in doses of 10 minims of Lugol's solution or of liquor iodi simplex (*B.P.*) three times a day, or in the form of potassium iodide 1½ grains (0.1 gramme) three times a day. The full effect will be seen at the end of about ten days, and the dose can then be reduced; for prolonged administration small doses (5 to 6 minims daily) should be given. In most cases either rest alone or rest and iodine will cause a remission, and steady improvement will continue. This may go on to recovery, or more usually a stage of partial recovery only is reached and a mild but chronic condition sets in.

Indications for Surgical Treatment

If after six months of efficient treatment it appears unlikely that complete recovery will ensue, some method of reducing the amount of functioning thyroid tissue should be employed—either thyroidectomy or irradiation. Irradiation takes several months to produce its effects, and is therefore unsuitable for the more severe cases or

for those in which an early return to working efficiency is essential; but in the mildest cases and in those in which the thyroid disturbance is but an incident in a long history of neurasthenia and ill-health it should be tried. In older patients and in those with nodular goitre the likelihood of recovery without operation is less, and operative treatment should not be delayed.

The tonsils commonly are moderately enlarged and congested, but this disappears following recovery and requires no special treatment; but if residual sepsis is present in the tonsils, teeth, or sinuses this should be dealt with if possible before surgical treatment by thyroidectomy. In the more severe cases it is advisable to postpone tonsillectomy till after the condition of the patient has been improved by thyroidectomy.

If medical treatment is not effective in checking the activity of the disease and the patient continues to lose weight thyroidectomy may have to be carried out before a remission can be established. Such a step is to be avoided if the activity of the disease can possibly be checked by any other method, for in such a case the operative risk is considerable; but it should not be delayed until the patient's condition becomes too serious. If necessary, a preliminary ligation of thyroid arteries should be carried out, the subtotal thyroidectomy being subsequently performed in one or two stages, according to the patient's condition.

Auricular Fibrillation

In the presence of auricular fibrillation and congestive heart failure prolonged medical treatment may be required before thyroidectomy can be safely performed, but once the fibrillation is established this is the only treatment that can restore health. Digitalis should be used to control the ventricular rate, and care must be taken to avoid digitalis poisoning, for the ventricular rate is more difficult to control than in auricular fibrillation due to other conditions, especially when the disease is actively progressing. Salyrgan and other diuretics are of great value when ascites and oedema are present. Previous to thyroidectomy quinidine is not advisable, for even if normal rhythm can be established it is not stable. Following subtotal thyroidectomy the rhythm frequently reverts to normal spontaneously, but if the irregularity persists at the end of one or two weeks quinidine should be given.

Surgical treatment should be regarded as an incident in the management of the case; following it a long convalescence of three to six months is advisable, and the patient must be guided and guarded through infections and the worries and troubles of life. Small doses of iodine (Lugol's solution, 5 or 10 minims daily) are advisable for three months following operation, and aid in the necessary readjustment of the endocrine system before health can be regained.

Surgical Treatment

Surgical treatment should not be considered when the early manifestations of the disease appear. When the disease becomes established through failure to respond adequately to the measures already indicated it becomes advisable to diminish the amount of secretion by resection of gland tissue. The patient will naturally want to know the degree of improvement to be expected.

This disease is not analogous to a condition such as appendicitis, in which the affected organ can be completely removed. The patient has still to rely on the gland tissue left after resection for the physiological needs of the body. The surgeon must therefore know by experience how much should be resected to obtain the greatest improvement possible while still leaving sufficient behind. If this is judged wisely the benefit is so great as to approach a cure. The pulse rate falls; the mind and body become tranquil; the feeling of heat disappears; the appetite—which in many patients has been excessive—and the basal metabolic rate both approach normal. The improvement in the eyes varies with the degree of exophthalmos; when this has been moderate it often disappears. There is nearly always some improvement, but when exophthalmos has been very pronounced the improvement in the eye signs may occasionally be disappointing.

When the disease has lasted a long time, or when complications have been severe, the improvement is no less striking and the relief is great; but if the heart has been gravely exhausted it cannot recover its original efficiency. The patient may feel well, but strength should not be tested beyond the limits of safety, and these limits are soon learned by experience. Auricular fibrillation disappears and normal rhythm is regained in about 80 per cent. of cases. Congestive heart failure due to thyroid toxaemia can be easily avoided after thyroidectomy. Glycosuria often disappears; if not, it is sometimes controlled by dietetic measures. If diabetes mellitus is a complication and has become difficult to control by insulin it is more easily controlled after thyroidectomy. If mental disturbances have been a direct result of the disease great improvement follows operation, but if the mental condition has preceded the symptoms of thyroid disease, or if it is of the depressive type, great care should be taken and the help of a psychiatrist sought.

In few diseases is the relief to the patient following operation so great as it is in toxic goitre. This must not tempt the surgeon to perform thyroidectomy in unsuitable cases, and hesitancy must be exercised, especially when the thyroid disturbance is subordinate to other factors contributing to the ill-health of the patient.

The death rate remains about 3 per cent. when an average proportion of very severe cases have to be dealt with. Injury to parathyroid glands is now rare; injury to a recurrent laryngeal nerve is not so rare; haemorrhage—primary or later—is avoided by the most careful haemostasis. Thyroid operations should not be performed when it is difficult for the surgeon to reach the case quickly in case of necessity during the first twenty-four hours after the operation.

Anaesthesia

Good anaesthesia contributes greatly to the safety of all operative procedures on the thyroid gland. Chloroform is unsafe; ether is to be deprecated. Satisfactory anaesthesia is obtained by nitrous oxide and oxygen helped by a hypnotic dose of avertin, together with infiltration of the neck with local anaesthetic solution.

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Nova et Vetera

SIR JAMES YOUNG SIMPSON

Dr. Douglas Miller's presidential address before the Edinburgh Obstetrical Society at the close of last year was entitled "Thoughts on the Life and Work of Sir James Young Simpson." After a brief description of Simpson's youth and undergraduate career Dr. Miller referred to Simpson's early post-graduate training, and in particular to his work as assistant in the department of pathology under Professor Thomson, in whose association he found one of the great formative influences of his life. It was here that he formed the Hunterian "don't think but try" attitude of mind, it was here that he developed habits of accurate observation and lucid description, and it was Thomson who urged him to turn his attention to obstetrics.

At the age of 28 Simpson was appointed to the chair of midwifery at Edinburgh, and proved to be one of the greatest teachers in the history of obstetrics. He possessed in full measure the qualifications which Osler said the good teacher must possess—the ability to bring an atmosphere of enthusiasm unto the classroom, a full and personal knowledge of his subject, and a sense of obligation which compelled him to be also a contributor. Within a few years the class of midwifery became for the first time in its history the largest in the university, attended daily not only by students, but by graduates from all over the world.

CHLOROFORM ANAESTHESIA

The discovery of the anaesthetic property of chloroform was of course Simpson's chief claim to the grateful remembrance of posterity. As a student his sensitive nature had been so revolted by the barbarous cruelty of an operation, performed, of course, on a fully conscious patient, that he had seriously contemplated giving up medicine in favour of law as a career. On that day had been formed the resolve to discover a means whereby the suffering which surgery then entailed could be avoided, and all his thought and energy were consecrated to this end. From the earliest dawnings of history painless surgery was an ideal that had occupied men's minds, and from time to time patients had been made insensible by drugs and vapours of various kinds. No anaesthetic agency, however, had been found of sufficient merit to compel general acceptance until on October 16th, 1846, Morton of Boston demonstrated the anaesthetic properties of ether in such a way as to convince the medical world. Three months later the first case of midwifery in which a general anaesthetic had ever been employed was delivered in Edinburgh under Simpson's care. This was an epoch-making advance, but Simpson was not satisfied that ether was the ideal anaesthetic for his purpose. He wanted, if possible, to find a substance more rapidly analgesic, more portable and less unpleasant to inhale, and after further research, in which self-experimentation played an important part, chloroform was discovered on November 4th, 1847.

SIMPSON'S OTHER ACHIEVEMENTS

Dr. Miller then referred in some detail to the more important contributions which Simpson had made to the knowledge both of obstetrics and of general medicine, and in particular to his work on delayed labour, on puerperal sepsis, and on hospital construction. A comparative study of the practice of obstetrics in 1840, when he was appointed to the chair, with that of 1870, the year of his death, left one with the conviction that, with the notable exception of Listerism, the advances made during Simpson's professional lifetime were as great in extent and importance as those which had been made since his death, and further, that much of this improvement in the standard of practice was due to his own observations and teaching.

If an attempt were made to analyse those factors, other than home influences, which specially contributed to his greatness, one found that there were three which might be briefly considered. First, an intellect of quite exceptional calibre. His studies on anaesthesia, on delayed labour, on hospital construction, all gave abundant evidence of originality and of profound thought directed along essentially practical lines. He was at once a master of obstetrical strategy and a brilliant exponent of tactics and technique. The second factor in Simpson's success was that complex quality termed personality, of which in this case the chief components were an intense vitality and an ardent enthusiasm. The third factor, and perhaps the most important, was his capacity for intense concentration and unremitting hard work. His work had the dual qualities of thoroughness and zest, so that whatsoever his hand found to do he did it with all his might. His interest in his vocation amounted to an all-absorbing passion, so that it seemed to come naturally to him to "scorn delights and live laborious days." No one did more than he to establish obstetrics as a science as well as an art, but the debt we owed him was to be measured not only by his contributions to our knowledge but also, and even more, by the example he gave of an enthusiasm that never languished and a lifelong devotion to the highest ideals of our profession.

ANNALS OF MEDICAL HISTORY

The last instalment for the year 1936 of the *Annals of Medical History*[1] contains ten main articles in addition to book reviews and the two recent sections of "Items of Interest" and "The Library," the latter containing a new letter in John Hunter's "quaint spelling" from the fine autograph collection of Captain F. L. Pleadwell, U.S.N. On the cover there is the portrait of Benjamin Smith Barton of Philadelphia, the "Father of American materia medica," about whom Dr. W. S. Middleton contributes what he modestly terms a "biographic miniature." Professor first of botany and later of materia medica, Barton was a naturalist, his name being preserved in the plants *Bartonia polypetala* and *Bartonia superba,* and an archaeologist who argued that the North American Indians originally came from Asia. Miss Elizabeth Bixler writes on Joan-Baptiste Pussin, a forerunner of psychiatric nursing in the qualities of kindness, sympathy, and good humour at the Bicêtre in Paris, where he worked under Pinel, whose portrait forms the frontispiece of this number. The subject of psychiatry in art is explored with the aid of thirteen illustrations by Dr. C. E. Trapp and Mary C, Trapp; and Dr. H. Silvette, in an article entitled "The Doctor on the Stage" discusses medicine and medical men in English drama during the seventeenth century. The history of treatment by digitalis receives due attention from Dr. M. S. Jacobs, who recalls the reason why Fuchs in the sixteenth century gave it the name digitalis, because "its flower resembles the thimble used for sewing." In his interesting account of mastoidectomy Dr. Sonnenschein points out that it was first performed in England in 1868 by James Hinton, the mystic, author of the *Mystery of Pain* and aural surgeon to Guy's Hospital. In this article a well-deserved tribute is paid to Sir Charles Ballance, "the grand old man of general and aural surgery." The history of foreign bodies in the air passages is set forth by Dr. L. H. Clerf, the pulmonary pathology in the Talmud is analysed by Drs. H. H. and T. N. Harris, and Dr. L. Goldman's article "War and Science" deals mainly with Virchow's activities.

[1] *Annals of Medical History.* New Series, vol. 8, No. 6, 1936. Edited by Francis R. Packard, M.D. (Pp. 477–576; illustrated. Volume of six numbers, £2 10s.; single numbers, 10s. 6d.). New York: Paul P. Hoeber Inc., Medical Book Department of Harper and Brothers; London: Baillière, Tindall and Cox.

LONDON COUNTY HOSPITALS

FACILITIES FOR MEDICAL EDUCATION

Sixteen of the general hospitals maintained by the London County Council have now been affiliated with medical schools for the purpose of providing clinical instruction to undergraduates, and at seven of the general hospitals provision has been made for residential accommodation and instruction in obstetrics of students from an equal number of schools. Sir Frederick Menzies, in a report on the hospitals and general medical services of the Council,[1] devotes his introduction to the development of facilities for medical education in the hospitals formerly administered by the Poor Law authorities. Very limited facilities for students existed in the Poor Law infirmaries, as they were called, notwithstanding an immense amount of clinical material very suitable for the training of undergraduate and post-graduate students. The realization of the importance to medical progress of providing every possible facility for medical education has been one of the features of the six years of the Council's administration.

Recognition from Examining Bodies

In addition to the arrangements for undergraduates, special arrangements are made at certain of the general hospitals for classes of medical men and women preparing for the final Fellowship examination of the Royal College of Surgeons. In view of the great opportunities in the general hospitals for obtaining the clinical experience necessary to the acquisition of the higher professional qualifications, it was considered desirable that the hospitals should receive recognition from the examining bodies as establishments where such experience could be obtained. All the Council's general hospitals have now been recognized by the University of London for the degree of M.D., Branch I (General Medicine), and ten hospitals with large maternity and gynaecological departments have received recognition by the British College of Obstetricians and Gynaecologists for the diploma and membership of the College. Arrangements have also been continued for students from the London medical schools to attend the infectious diseases hospitals. For this purpose students from each medical school are allocated to a particular fever hospital. Courses of instruction in clinical practice and hospital administration for medical men and women who intend to sit for examinations for the D.P.H. have been provided, and authority has been granted by the Council for examinations for certain degrees and diplomas to be held at any hospitals by arrangement with the Council's medical officer of health.

During the year with which the report deals the new post-graduate medical school at Hammersmith Hospital was opened by King George V, who expressed the hope that the school would draw students from all parts of the Empire. The students who joined during the first few months came from nineteen countries. Apart from the British Isles, the greatest numbers were from India, Canada, South Africa, and Australia in that order. To complete the account of facilities for medical education provided by the London County Council, it may be mentioned that at the children's and tuberculosis hospitals facilities are afforded from time to time to groups of students, usually under the sponsorship of recognized professional organizations, to visit the hospitals to receive information on the work and methods of treatment in progress, and post-graduates may also obtain experience of the technical and administrative methods adopted in the Council's pathological laboratories and its antitoxin establishment. Reference is made in the report to the fact that permission is given from time to time for clinical and other meetings of Divisions of the British Medical Association and other medical societies to be held at the Council's hospitals, such meetings "enabling local general practitioners to keep in touch with the work of their district, and promoting cordial and friendly co-operation between the practitioners and the hospital staff."

Control of Whooping-cough

One important matter dealt with at length in the report is the control of whooping-cough. Whooping-cough is a major cause of death in childhood, ranking fourth among the principal causes of death of children under 5 in London during a period of five years. An average of about 2,300 cases are admitted to the Council's special hospitals every year. The average case fatalities per cent. in the Council's hospitals of the four common infectious diseases during the last five years have been: whooping-cough, 8.47; measles, 5.21; diphtheria, 4.11; scarlet fever, 0.48; but it should be added that the cases of whooping-cough and measles admitted to hospital are selected, and those of diphtheria and scarlet fever are not.

It is pointed out that while, *a priori*, isolation should be an effective procedure in the control of epidemics, in practice it is not so successful, owing to the fact, in whooping-cough, that the early catarrhal stage is the most infective, and that by the time the "whoop" appears infectivity is much diminished. In consequence the practice of segregating only definite cases has little influence on the spread of the disease. Hospitals, therefore, must be considered as concerned more with treatment than with prevention of spread. In comparison with the average case of scarlet fever, whooping-cough has undoubtedly a greater claim to hospital accommodation. Epidemics of whooping-cough tend to alternate with epidemics of measles, and it is improbable that the peak requirements for the two will coincide. When measles is prevalent, however, accommodation for whooping-cough will be inadequate. At such times the admission of uncomplicated cases of scarlet fever should be reduced to a minimum. The length of stay of cases in hospital might also be diminished. In three or four weeks a large proportion of cases are free from infection and from dangerous and serious complications.

With regard to immunization against whooping-cough, the report states that the available evidence suggests that this either prevents or attenuates attacks, but is not yet conclusive enough to warrant the general application of the method. "There is little doubt that in the near future the immunizing agent, dosage, and technique will, as in the case of many other infectious diseases, have the approval of all competent medical and scientific opinion. Thereafter, since the method of immunization for all diseases is similar, all immunization should be performed by the same authority." In London campaigns for immunization (mainly against diphtheria) are conducted by the metropolitan boroughs. It is considered that there is a case for the unification of immunization schemes in London.

Other Medical Services

The greater part of the report is occupied by statistical tables affording much useful and curious information. One feature is the continual rise in the number of births in Council hospitals and institutions. These have increased by more than 50 per cent. in five years, from 10,000 in 1931 to 15,500 in 1935. The number of patients seen at the ante-natal clinics has doubled in four years, from 48,000 in 1932 to 97,000 in 1935. Under the district medical service scheme part-time general practitioners during the year made 53,710 domiciliary visits and dealt with 173,218 attendances at the medical relief stations. The corresponding figures for medical officers on the staffs of hospitals were 15,960 and 92,181 respectively. The examinations carried out in the group and institutional pathological laboratories during the year numbered 441,267, an increase of over 60,000 on the year.

Finally, there is the comprehensive organization for getting casualties to hospital. The accident ambulances were called out 47,634 times in the year.

[1] *Annual Report of the London County Council, 1935.* Vol. iv (Part I). Public Health—General and Special Hospitals. P. S. King and Son, Ltd., Westminster. (2s. 6d.)

Local News

ENGLAND AND WALES

The King's Fund

The King has been pleased to become Patron of King Edward's Hospital Fund for London. His Majesty has appointed H.R.H. the Duke of Kent President of the Fund, the appointment of His Royal Highness having been recommended by the Lord Chancellor, the Prime Minister, and the Governor of the Bank of England, in accordance with the Act of Parliament.

Research in Dairying

The last annual report of the National Institute for Research in Dairying, University of Reading, states that recent activity in the dairy industry has been reflected at the Institute by an increasing demand for advisory services. Many requests for information involve minor investigations, and some indeed require thorough and complete research. Nevertheless, despite the additional burden imposed by these duties, there has been a considerable output of original work during the twelve months under review, and summaries of forty-eight scientific papers are appended to the report. It is stated that contagious abortion, discovered by blood test reactions and by premature calvings, was found to exist in the Institute's herd in the autumn of 1933. After the lapse of a year, despite measures of control, the number of infected cows had markedly increased, and it was decided to continue blood tests of all negative cows at monthly intervals and of in-calf heifers at wider intervals, and to segregate the negative from the positive stock as far as possible. This policy was pursued during 1935, but it is stated that a number of negative animals have become positive, and that several cows have aborted before giving a positive reaction. No adequate explanation of the original source of infection has been found, and it is noted that it is ten years since fresh cows were introduced into the herd, while all bulls have given negative reactions to the blood test. The problem is being intensively studied with a view to obtaining information which may help towards the eradication of the disease. The experimental work of the Institute covers a wide range. Recent improvements in the technique of artificial insemination have been studied, giving a good proportion of effective results, though it has been found that semen does not remain fertile if kept more than forty-eight hours. In the course of nutritional investigations it was demonstrated that, as a result of feeding cows during the winter months on 2 lb. per diem of cacao shell, an inexpensive by-product of another industry, the vitamin D content of the milk was raised to summer level. In a comparison of the vitamin D content of butter made from the milk of Guernsey and shorthorn cows living under identical conditions it was found that the ratio of vitamin D secreted was 1.7 to 1 between Guernseys and shorthorns. Work is being carried out on the standardization of cheese with a view to replacing the present empirical method of grading by a more scientific procedure.

Blood Transfusion Service in Leeds

It appears from an article in the *Yorkshire Post* that notwithstanding a campaign early last year to recruit blood donors for transfusions at the General Infirmary at Leeds and other medical institutions and nursing homes in that city there is still a serious shortage of volunteers. The difficulty mainly concerns one group of donors (Group 4, "universal"), and the position has been worsened by the number of recent resignations from the transfusion service. There are nearly 400 donors on the list, but only about a third of the volunteers belong to Group 4. Valuable help is being given to the local transfusion service by the Leeds Rotary Club.

SCOTLAND

Glasgow Western Infirmary

Colonel D. J. Mackintosh, who has been medical superintendent of Glasgow Western Infirmary for forty-four years, has now been appointed consulting medical superintendent, and his assistant, Dr. Loudon MacQueen, has been promoted to the post of acting medical superintendent. Colonel Mackintosh, after a preliminary education at St. Andrews, studied medicine at Glasgow University and graduated M.B., C.M. in 1884. After holding resident posts he was appointed medical superintendent of the Victoria Infirmary of Glasgow when it was opened in 1890, and two years later he was selected for the corresponding position at the Western Infirmary. Before the war he had been an active officer in the Territorials, and during the war he supervised the military hospitals in the Glasgow area. He afterwards received the decorations of C.B. and C.V.O., and the degree of LL.D. from Glasgow University in 1912. He has taken an active part in State inquiries into hospital administration and services, and has been widely consulted in regard to the construction of various hospitals. His *Skiagraphic Atlas of Fractures and Dislocations,* and *Construction, Equipment and Management of a General Hospital* are well known. Dr. Loudon MacQueen, who succeeds him, after an education at Glasgow Academy and Loretto, graduated M.B., Ch.B. at Glasgow in 1924, and took the D.P.H. in 1928. During the war he served with the R.F.A. in Mesopotamia. After holding resident posts, he became assistant superintendent of the Western Infirmary in 1927, and has held this appointment since that time.

Edinburgh Royal Infirmary

The annual meeting of the Court of Contributors to the Edinburgh Royal Infirmary for consideration of the annual report on the work of the institution was held on January 4. The total ordinary income had amounted to £129,020, while the ordinary expenditure had been £169,694. The latter showed an increase over the expenditure for the previous year of £12,996, and it was noted that the ordinary expenditure during the course of the past ten years had increased by £40,000. These figures, it is stated, had caused the managers grave concern, especially in view of the enlargement of the hospital, which would preclude any possibility of reduction being effected in the future. The principal reason for the increase of expenditure during the past year had been the addition of the new building for dermatological and venereal diseases, which was opened last summer. The average cost per occupied bed had been over £175 as compared with £167 ten years ago, while the average cost per patient per day had been 9s. 7¼d., and the average cost per patient treated had been £8 4s. 8d. The amount of extraordinary expenditure had been £28,332, of which £20,625 had been on account of payments made for the new department for dermatology and venereal diseases. There was thus a total deficiency of £77,006, which, however, had been met by legacies and special donations for general purposes amounting to £78,659. The number of in-patients treated had been 21,568 as compared with 20,695 in the previous year. The daily average number of in-patients had been 965.5 as compared with 936.4 in the previous year, and the average length of stay had been 17.14 days as compared with 17.26 days. Of the patients treated, 9,506 resided in Edinburgh, while 11,169 came from country districts. In addition to the patients treated in the wards, out-patients to the number of 72,543 had been treated, an increase over the figures for the previous year of 4,960, and the number of attendances by these patients had reached the total of 379,688, which represented a daily attendance throughout the year of well over 1,000 out-patients. It is pointed out that the number of cases admitted as the result of motor traffic accidents had been 415, an increase of forty-nine over those of the previous year, while a further 587 motor accident cases

had been treated in the surgical out-patient department, and it is estimated that the expenditure involved in treating these cases was about £3,000, although the compensation recovered did not amount to half this sum. The constructional work connected with the maternity pavilion and the new nurses' home was now well advanced, and it was hoped that these buildings would be occupied before the end of 1937. The total cost of this extension scheme would amount to approximately £500,000. The appeal issued in 1930 had produced nearly £300,000, but it would now be necessary to reopen the appeal for the further amount of £200,000 required, and for this purpose the managers had appointed an appeal organizer.

Diphtheria in Edinburgh

The incidence of types of diphtheria among 625 cases and carriers from 1932 to 1936 has been investigated by Christison, Wright, Shearer, and Pearson. They point out that the case mortality in hospitals of the Metropolitan Asylums Board in 1889 was 40.7 per cent., falling to 22.8 per cent. in 1895. The corresponding figures for Edinburgh on these dates were 27.1 and 20.7 per cent. With the introduction of antitoxin in 1894–5, the mortality fell rapidly, but within the past few years epidemics with a high death rate have been reported in various parts of England, and since in these epidemics there was often a lack of response to antitoxin, the homogeneity of the toxins produced by different strains of the diphtheria bacillus has been questioned. The present workers found that 25 per cent. of the strains of bacilli occurring in Edinburgh could not be included in the gravis, mitis, and intermediate types, and they adopted a classification into six types, although clinically the cases were classified as severe, moderately severe, or mild. They found that Type II strain had been identified in 59.1 per cent. of cases in 1933, but in only 26.9 per cent. in 1936, while in contrast the number of cases showing Type IV strain had been practically non-existent in Edinburgh in 1932, but had rapidly increased in the later years. Generally speaking, it was found in Edinburgh that the proportion of mild cases was decreasing and that of severe and toxic cases increasing. Until the winter of 1935–6 Type II had undoubtedly predominated, while the disease had on the whole been mild. It is pointed out that the proportional incidence of the various types differs geographically, for Glasgow had approximately the same incidence of Type II strains as Edinburgh in 1933, whereas in Leeds, Hull, and Berlin there was a high percentage of Type III strains. The types also appeared to differ in each area from time to time—for example, in Manchester in 1935 the proportion of Type II strains decreased rapidly coincident with an increase in Type III strains. The report points out that there is ample evidence that active immunization properly carried out and adequately controlled by Schick testing can go far towards reducing the morbidity from the disease, and cases of diphtheria among the nursing staffs of hospitals in Edinburgh and Birmingham had been practically eliminated since the introduction of routine immunization. In Edinburgh the type commonly found in carriers among school children was Type VI in 60 per cent. of cases. The writers indicate that the biological relationship which appears to exist between the increasing Type IV in this country and the gravis type prevalent in recent epidemics both in England and Germany seems to show the likelihood of an increase in severity of diphtheria epidemics in the future and the importance of active immunization.

A meeting of the London Jewish Hospital Medical Society will be held at the London Jewish Hospital, Stepney Green, E., on Thursday, January 14th, at 3.30 p.m., when there will be a symposium on "Modern Aspects of the Prevention and Treatment of Infectious Fevers," to be opened by Dr. Andrew Topping, Dr. Maurice Mitman, and Dr. J. M. McCartney, with the president, Mr. Arnold Sorsby, in the chair.

Reports of Societies

KALA-AZAR IN THE SUDAN

At a meeting of the Royal Society of Tropical Medicine and Hygiene at Manson House on December 10 a paper was read by Sir ROBERT ARCHIBALD on the epidemiology of kala-azar in the Sudan.

Sir Robert said that the first case of kala-azar in the Sudan was recorded by Sheffield Neave in 1902, since when definite endemic areas had been found mainly in the provinces adjacent to the Abyssinian frontier. Sporadic cases had also been recorded in Southern and Western Sudan. The disease had never appeared in epidemic form, the sporadic cases in the Sudan only serving to maintain a smouldering fire of infection with slight periodic increases in incidence in villages and towns in the endemic areas. The endemic areas were confined to districts where the annual rainfall was ten inches or more, indicating that the disease bore some relationship to rainfall and humidity; it did not occur in the northern arid areas of the Sudan. In the endemic areas a ten-inch or more rainfall was usually obtained between the months of July and October; at this period humidity might reach as high as 90 per cent.; day temperatures were low and the rainfall varied from 100 to 200 mm. or more each month. For the remainder of the year the climatic conditions in the endemic areas approached those of Northern Sudan. From such data it appeared reasonable to infer that the seasonal incidence of the disease was between July and October; hospital records seemed to support such a hypothesis. This short seasonal incidence might account for the absence of the disease in epidemic form in the Sudan. No accurate data had been obtained to prove the incubation period of the disease, though experimental infection of monkeys suggested an incubation period of sixty to ninety days. In the endemic areas adjoining Abyssinian territory cases of nasopharyngeal leishmaniasis (espundia) had occurred, but cutaneous leishmaniasis (*L. tropica*), although looked for, had not been recorded.

In the Sudan kala-azar had rarely occurred among Europeans. There was no connexion between occupation and disease. Data showed the importance of proximity or prolonged contact with cases to be in some way concerned with the problem of transmission: in several cases there was a familial incidence of the disease. Ambulant cases, not ill enough to seek treatment, were also detected. Records showed that adult males and males under 15 were more liable to infection than females.

In 1934 a total of 289 cases of kala-azar was recorded; in 1935 the incidence was reduced to 171, probably as the result of better medical supervision, the detection of early ambulant cases, and increased facilities for treatment. The formol gel test for the detection of kala-azar had given disappointing results, but used in conjunction with the urea stibamine test it was of value. Morphologically and culturally the causal parasite of kala-azar in the Sudan was identical with that found in other countries. Clinically the disease was similar. The causal parasites were usually found with ease in spleen puncture and in smears. In the Fung Province parasites were present in the nasal smears of five out of seventeen cases. In thirty-five cases, in all stages of the disease, no parasites were seen in 320 peripheral blood films examined. In the Kapoeta district in South-Eastern Sudan parasites were invariably present in the peripheral blood. The viability of parasites in nasal mucus was proved by animal inoculation. Parasites were not found in excised portions of skin taken from six cases.

Man was apparently the only host of kala-azar. Domestic and other animals examined were never observed to be infected. Canine kala-azar has not been found in the Sudan. Blood-sucking insects, mosquitos, sandflies, Jassid bugs, bed-bugs, fleas, ticks, and lice collected in kala-azar hospital wards and kala-azar huts were examined for

leishmania parasites with negative results. Two species of sandflies belonging to the major group, *P. squamipleuris* and *P. perniciosus*, were found in the endemic areas. Grey monkeys were susceptible to experimental infection intradermally, subcutaneously, and intraperitoneally, and could be infected by nasal spraying. Dogs were infected with difficulty; two series of contact experiments carried out in an insect-proof room showed that the disease could be transmitted from infected to healthy monkeys. The epidemiological data obtained indicated lines for the control of kala-azar in the Sudan, even if the problem of transmission, as in other countries, still remained unsolved. Certain aspects in the epidemiology of the disease in the Sudan afforded a promising field for future research on the problem of transmission.

General Discussion

Sir RICKARD CHRISTOPHERS, in opening the discussion, referred to the curious distribution of kala-azar which could not be associated with any climatic conditions. The Mediterranean type of the disease was different in many aspects from the Indian type, and he would like to know to which type the Sudan disease conformed—the feature in favour of resemblance to the Indian condition was the absence in the Sudan of the canine disease. He drew attention to the importance of examining sandflies for infections of the proboscis. Dr. C. M. WENYON referred to the method of transmission of kala-azar. He did not think that because viable parasites had been discovered in faeces, urine, and nasal secretions of cases of kala-azar that was proof that the disease was contagious.

Dr. Wenyon also read a communication from Dr. ADLER, who pointed out that in his opinion contagion, if it ever occurred in this disease, was merely an accident. He felt that if the transmission was by contagion the disease would be universal and not limited to special areas. The association of kala-azar with sandflies of the *P. major* group was too close to be accidental. This had been his experience in Catania and Naples, while in Crete at Canea only 350 metres separated a kala-azar area from another area where it did not appear; and this distance also separated the area where a sandfly of the *P. major* group (*P. perniciosus*) occurred from the other from which it was absent. He did not think that direct transmission of leishmania from man to man or from dog to dog could maintain the disease for any length of time.

Colonel J. A. SINTON remarked that in India long ago it had been noted that the spread of the disease was related to a close association between the sick and healthy, and that a removal of healthy families to new houses a mere three hundred yards away was sufficient to check the disease. This fact seemed to be more in favour of transmission by an insect with a limited range than by passage of infection directly from person to person. Sir JOHN MEGAW, in view of Sir Rickard Christophers's remarks about the possibility of contagion, wished to emphasize the strictly local distribution of the disease as distinctly against any such view. Dr. MANSON-BAHR drew attention to the curious patchy distribution of the disease, an explanation of which seemed to be as elusive as those for the irregular distribution of birds. Dr. J. W. LINDSAY referred to the distribution of cutaneous and muco-cutaneous leishmaniasis in South America, and noted that during the past year or two the practice of examining portions of liver obtained at necropsy from cases which had died of suspected yellow fever had recorded forty-one instances of leishmania infection, a discovery which appeared to indicate that kala-azar was present in Brazil. Air Commodore H. E. WHITTINGHAM said he had recently seen a case of kala-azar contracted in the Aden Protectorate in an officer of the Royal Air Force who had not been out of the Protectorate for eighteen months, though he had served in India five years previously. The sandfly, *P. perniciosus*, was known to occur in Aden. Sir ROBERT ARCHIBALD, in reply, agreed that the Sudan disease appeared to resemble that of India rather than that of the Mediterranean. As regards sandflies, he had dissected about twelve hundred and in so doing had not neglected to examine the proboscis. No instance of infection with flagellates was encountered. As regards the method of transmission he still had an open mind, though he considered that too much emphasis had been given to the theory of sandfly vector.

BLOOD PHOSPHATASE IN BONE DISEASE

At a meeting of the Royal Medico-Chirurgical Society of Glasgow on December 18th, 1936, with the president, Mr. G. H. EDINGTON, in the chair, three papers were given.

Dr. NOAH MORRIS, discussing "The Significance of Plasma Phosphatase in Bone Disease and Jaundice," said that since Robison's work on phosphatase had been applied to clinical conditions variations in plasma phosphatase had been studied in numerous pathological states, especially those affecting osseous tissue. The presence of that ferment in the blood might be taken as a rough estimate of its production in the tissues, but it was quite possible that an increase might be due to diminished utilization in its place of origin. Plasma phosphatase was markedly increased in Paget's disease, generalized osteitis fibrocystica, moderately raised in rickets, osteomalacia, and bone cancer, and slightly above normal in osteoporosis and osteopetrosis. In multiple cystic tumours of bone a great increase in plasma phosphatase might be of considerable assistance in determining whether or not there was over-production of the parathyroid hormone, and therefore whether operative intervention was required. It was not of much value in the early detection of either Paget's disease or osteitis fibrocystica, since changes were generally seen in the skiagram before the phosphatase was increased.

An analysis of phosphatase estimations in a group of 500 infants and young children showed that while in a small number of cases the phosphatase was not increased even in the presence of clinical and radiographic signs of rickets, there was on the whole a moderate degree of correlation between the height of the plasma phosphatase and the severity of the rachitic condition. In untreated active rickets the phosphatase continued to increase and a stationary value might be taken as evidence of early healing. The rate of fall depended on the dosage of vitamin D. The estimation of plasma phosphatase had a place in the diagnosis of the pre-clinical stage of rickets, but could not by itself be used to indicate in the individual patient either the severity of the rachitic process or the presence or absence of healing.

Phosphatase Estimations in Jaundice

While it was true that the phosphatase was generally very much increased in cases of obstructive jaundice, but moderately raised in toxi-infective and within normal limits in haemolytic jaundice, Dr. Morris said there was such an overlap of figures that the determination of plasma phosphatase was of little value in making a decision as to the nature of the jaundice. Clinical data obtained in association with Mr. A. B. Kerr showed that removal of bile by means of a bile fistula might lead to a pronounced increase in the plasma phosphatase without causing a significant alteration in the bilirubin content of the blood. It was known that the absence of bile from the duodenum led to a defective absorption of lime. Personal experience had indicated that a calcium-poor diet caused a marked increase of plasma phosphatase. It was suggested, therefore, that in jaundice and other conditions an increase in plasma phosphatase occurred whenever the retention of lime was insufficient to meet the demands of the osseous tissue.

X-Ray Dosage in Cancer

Dr. FERGUS L. HENDERSON, in a short paper on "*X*-Ray Dosage with Reference to Malignancy," discussed the difficulty in the accurate measurement of *x*-ray doses, and

explained that, while it was now possible to determine accurately the number of "r" units which were being administered, it was impossible to forecast exactly what effect any particular dose would have on the skin of any individual. He stated that the common procedure today was to give heavy doses of *x* rays, well filtered, over a period of three to five weeks, and made it clear that the tendency of patients to omit a day's treatment for various reasons negatived the possibility of accurate dosage. He further urged that, wherever possible, patients should be told the truth regarding the malady from which they were suffering, as it was otherwise almost impossible to get them to submit to the suffering and discomfort associated with the heavy doses of *x* rays required to produce retrogression of a tumour growth.

Dr. ANGUS SCOTT described in detail a case of chronic adhesive pericarditis. Operation failed to relieve the condition. At necropsy evidence was found to show that the condition was of tuberculous origin.

ANXIETY NEUROSIS

A meeting of the Devon and Exeter Medico-Chirurgical Society was held on December 17, 1936, the president, Dr. A. HIPWELL, being in the chair. Dr. H. W. EDDISON read a paper on "Anxiety."

He said that anxiety was the natural response to an external situation which threatened to become overwhelming, and was the subjective component of a general psychosomatic response which had not yet become differentiated into fight or flight. It was thus to some extent analogous to bodily pain, which in its turn was part of a reaction against bodily disorders or threats from within. Carrying this conception further, appropriate contrasts in their bodily components might be expected; thus with anxiety would be found general alertness and brisk superficial reflexes, while in bodily pain there might be concentration upon the lesion within and withdrawal from the outer environment. It was probable that neither anxiety nor bodily pain was in proportion to the exciting cause. Bodily pain might be forgotten in the urgency of an external situation and, conversely, external risk might seem remote in the case of an intolerable internal pain. In both the matter was one of balance between the internal and external direction of the psychosomatic response. Just as anxiety was a response to a real external menace so could normal everyday situations appear relatively overwhelming and give rise to anxiety when there was failure in the physical health. In the old, anxiety and worry were so general and easily aroused as to be almost normal senile findings. The elderly became less and less adaptable to the ordinary situations of everyday life, which appeared relatively formidable. Treatment lay in preserving strength by reducing the activities; one day in bed each week or fortnight did much in allaying anxiety. As opposed to cases with an obvious basis for anxiety the most troublesome were those with no tangible cause but only a dread of impending disaster ready for attachment to trivial incidents. To explain this elusive type of free anxiety Dr. Eddison referred to two methods of dealing with inconvenient instinctive tendencies—namely, replacement by opposites, and avoidance of the situation likely to evoke the impulse. As an example of the first method he instanced the apparently tender-hearted onlooker exclaiming that he would like to horsewhip a fellow who was ill-treating an animal. Here the aggressiveness of the onlooker had been evoked, quite unaware that he was making the occasion a secondary situation for his own aggressiveness. In illustration of the second method there was the person who objected to watching performing animals because he or she could not endure seeing them ill-treated. The fact of ill-treatment being readily assumed, anxiety afforded protection by keeping the person away from a situation which would evoke his or her own primary aggressiveness. The external threat, to which the anxiety was a response, lay in the danger of unmasking a tendency which the individual was contriving to conceal from himself. All phobias had this structure, and mental pain protected a mental tender spot from excessive stimulation. From this it would be seen that reassurance as to the present or secondary situation would prove neither helpful nor acceptable to the patient. More could be done by a sympathetic understanding that the troubles seemed real to him, but at the same time questioning whether they were the real troubles. The patient accepted the physician as an ally, and the unconscious primary situation lost some of its menace. Although this involved dependence on the physician it was the next best procedure to a prolonged investigation of the root causes. Another troublesome class comprised those who did not feel anxiety in situations justifying it, but who showed later the physical signs of anxiety for a long time. In the war many, in spite of their anxiety, stuck to their posts and masked their anxiety behind their deeds, working off their emotion coincidently, but afterwards displayed tremors, brisk reflexes, dilated pupils, sweating, diarrhoea, and loss of weight. Dyspnoea and palpitation occurred in response to any emotional stimulus or call to action. The symptoms tended to be obstinate, and thyroid enlargement might be present. The speaker stressed the importance of the sequence of events should the subjective emotion of anxiety not be worked off at the time. In such cases the physical components would often persist indefinitely or until the cause was unmasked through prolonged and detailed anamnesis. No doubt some civilian cases of hypothyroidism were of like explanation. Neurasthenia was a vague term, including many of the conditions in which anxiety was associated with depression, apprehensiveness, sleeplessness, and a tendency to fatigue. In such cases it was often doubtful whether to place the case under strict observation. Anxiety might be the forerunner of melancholia, a condition potentially suicidal, and requiring the strictest precautions at all periods of life.

Suicidal Tendencies

A decision on the suicidal tendencies should be based on the replies to three questions. (1) Had there been recent deterioration in the capacity for mental effort? A slow response was suggestive; neurasthenics were not retarded. (2) How did the patient explain his inability to concentrate? Fatigue from worry and loss of sleep was not alarming in itself, but vague reference to "different feelings" in the head or body and hypochondriacal ideas should arouse suspicion. Retardation and the appearances of hypochondriacal symptoms for the first time should give sufficient warning of the need for constant observation day and night, but would not be sufficient to warrant removal from home so long as adequate supervision could be ensured. (3) This was concerned with the patient's progressive failure to meet the demands of everyday life and his mental attitude towards that failure. In the progressive stage there would be an attempt to rationalize the failure and to refer it to himself or herself, and not externally. Past errors of judgement and all kinds of self-accusation were brought forward to account for the trouble these patients considered they had brought on themselves and on those near to them, and all hope for the future was abandoned. If this state of mind was accompanied with refusal or inability to discuss hopes and fears for the future the strictest supervision was indicated in a suitable nursing home or mental hospital. It was, however, advisable to elicit this loss of hope on two separate occasions, however close together, and thus to avoid the charge of magnifying a casual remark. Dr. Eddison emphasized the importance of remembering that melancholia seldom lasted less than six months; its sudden disappearance suggested that suicide had been decided upon as the only way out. Decision as to the ultimate discharge must be based upon the return of the patient's hopes, doubts and fears, and willingness to discuss the future. The doubts and fears should then be discussed with the nearest relative.

Correspondence

Physical Medicine

SIR,—I cordially agree with Dr. A. Gordon Watson (*Journal*, December 19, 1936, p. 1288) and Dr. Alfred Cox (January 2, p. 43) that physical medicine, like all other branches of medicine, should enjoy university teaching, since practice without teaching is in every way disadvantageous. One branch, radiology, has already escaped from this anomalous position, with enhanced efficacy and prestige. The British Balneological and Climatological Society recommended university teaching in the subjects in which it was interested so long ago as 1897. But I always hoped that the University of London, to which with all external students I was so much indebted, would consent to supply this want. After all it is the central university of the Empire, as the new buildings will presently convince us. For many years students from all the British possessions have found within its portals the special teaching and qualifications which they required, even in subjects the most recondite and least sought after. Facilities were especially offered for the neglected departments of knowledge.

I sometimes wonder what would have been the long result if the scheme of teaching that was laid before the Senate by Sir Wilmot Herringham in 1914, and prevented by the war, had gone through. I still hope that it may be possible for the University to meet the deficiencies in the teaching of physical medicine. That great province includes many nearly independent specialties and branches of practice. May I suggest that perhaps the best solution would be to institute diplomas for proficiency in these branches severally. The question of the demand for this or that special teaching is beside the point, but rather what is needed. Education is not always demanded; a supply of materials sometimes creates a demand.—I am, etc.,

London, W.1, Jan. 3. R. FORTESCUE FOX.

Benzedrine

SIR,—In your annotation on the use of benzedrine (*Journal*, December 12, 1936, p. 1204), you state that "The drug also causes a rise in the red and white cell counts." The increase in red cells produced by the pharmacologically related substances adrenaline and ephedrine is recognized, and in some experiments on guinea-pigs (*J. Pharmacol.*, 1936, **56**, 389) Dr. B. H. E. Cadness and I concluded that "ephedrine probably causes extrusion into the circulation of erythrocytes leucocytes, and platelets from the storage and haemopoietic centres, including the bone marrow." These effects of ephedrine were also observed after splenectomy. A single dose of 2 grains (120 mg.) by mouth produced in my own blood a rise of erythrocytes from 5,370,000 to 6,230,000, the change persisting for some hours. A cumulative effect may have been responsible for the high figure of 10 millions in the case quoted.

Dr. D. M. O'Connor, in his letter (*Journal*, January 2, p. 43), states that a patient, taking benzedrine, experienced "increasing difficulty in voiding faeces and urine." This symptom is also part of the toxicology of ephedrine. In my own experiment, about ninety minutes after taking 120 mg. of ephedrine by mouth, an urgent desire to micturate was associated with a painful sensation at the end of the penis and an aching of the testicles, which tended to retract into the abdomen. Nevertheless it was found impossible to pass any urine, but at the end of three hours the painful sensations passed off and a copious diuresis occurred. Similar sensations were experienced by a laboratory assistant after taking 90 mg. of ephedrine.

The undoubted exhilaration and increased motor and mental hyperactivity were followed by a sense of extreme exhaustion and a rapid pulse. It would appear as if nature demanded compensation for the period of artificial stimulation. Unfortunately insomnia was a paradoxical and exasperating association of the fatigued state. Incidentally, the therapeutic stimulating effect of insulin hypoglycaemia in schizophrenia, etc., may be partly due to the secretion of adrenaline, which may continue for some hours (*Proc. roy. Soc. Med.*, 1936, **29**, 36). If so, this therapy would be comparable to that of ephedrine and benzedrine.—I am, etc.,

S. LEVY SIMPSON.

London, W.1, Jan. 2.

The Influenza Epidemic

SIR,—The present epidemic of influenza over the whole of Europe recalls the great epidemic of 1918. At the present time the cases are not of the fulminating type with severe lung complications such as were observed in 1918 under the mental strain and malnutrition consequent upon the long duration of the war.

I quote a typical history of a case of influenza which I have observed recently and which shows some special and some characteristic features:

The patient was a healthy girl of 16. The temperature chart showed a sudden onset of the illness with rigor and a temperature of 102° F. At the same time a focus was observed in the right tonsil which contained fusiform bacilli and spirochaetes only. On the next day the patient complained of pain under the sternum and of irritating sneezing and coughing. By the third day the temperature had gradually risen to over 105°, and at the same time, upon percussion, a slight dullness could be heard over the right lower lobe. The pulse rate at the start was 124, but this had dropped to 90 by the fourth day, when a slight nasal bleeding occurred. By the fifth day the temperature had dropped to 98.4°. Together with the fall in temperature and pulse rate the production of a very scanty rusty sputum was observed, in which a few *H. influenzae* were found but no pneumococci. At the same time the initial symptoms of coughing and sneezing became less marked.

The patient was exhausted and became very sleepy; the temperature gradually rose again, and on the sixth day was 103.5°. The pulse rate remained characteristically low, and with the decrease in temperature subsided to 60 on the eleventh day, by which time the temperature had dropped to 97°, and from this time remained subnormal. On the fifth day severe nasal bleeding occurred and on the sixth day fresh blood was seen in the sputum.

At the same time, as was shown by the dullness and other signs over the right upper and lower parts of the back, the congestion of the lung increased. On the sixth day the differential leucocyte count showed the presence of 53 per cent. polymorphs, 3 per cent. eosinophils, 38 per cent. lymphocytes, and 6 per cent. monocytes. On the seventh day the appearance of wet and dry rales, together with crepitation over the sites of dullness, marked the resolution of the congestion, and on the tenth day the rales disappeared.

The patient was still very weak, and thrush appeared and persisted for a day on the tongue and the left side of the fauces. On the eighteenth day, after the patient had been out of bed for three days, numerous white spots appeared on both tonsils, but were not accompanied by any rise in temperature. A culture revealed only the presence of staphy-

lococci and *M. catarrhalis*. The blood pressure was 105/65 mm. Hg, and nothing abnormal was found in the urine. At the start of the illness there was a slight constipation.

The patient was kept in bed from the start and given 5 grains of aspirin twice daily. Four pints of liquid in the form of tea, orangeade, or lemonade with much sugar was given each day, together with a diet poor in protein and rich in carbohydrate. From the eighth day, when the first signs of resolution were observed, ammonium chloride was given as an expectorant, together with caffeine, to stimulate the circulation.

If I compare this history of influenza with the experiences of the epidemic of 1918–21 there are some differences and some points of similarity. One of the clinical differences is the appearance in this case of a tonsillitis at the beginning and end of the illness. In the epidemic of 1918 I invariably observed the appearance of *H. influenzae* in the sputum and also cultured it from the blood, lungs, glands, and other remote organs in those cases where a post-mortem examination was made.

As in this case we observed the sudden onset with bronchopneumonic symptoms, which in severe cases rapidly led to death from heart failure. In other cases death occurred after the second week. Post-mortem examination of these cases showed that there were widespread foci of congestion, which in many cases almost amounted to abscess formation, in much larger areas of the lungs than could be discovered by clinical examination. There were also distinct areas of empyema, which not only were situated on the base of the lung but were also frequently interlobar. Any active interference by puncture or other method was extremely dangerous, and was therefore avoided, as it usually proved fatal. Streptococci and pneumococci were found in the later stages, together with *H. influenzae*.

Large doses of camphor oil given by intramuscular injection as "depot doses" or treatment with cardiazol, digitalis, or caffeine from the beginning proved to be useful in combating the heart failure. Toxic symptoms such as nasal and skin bleeding were frequently observed. The intake of large amounts of liquid with much sugar may have had the effect of diluting the toxins and of replenishing the loss of water in the circulation. The sugar has perhaps a useful influence on both liver and heart muscle. Quinine and salicylates were used at the beginning, but had no more effect than any other type of specific or unspecific treatment.—I am, etc.,

London, W.1, Jan. 4. ERNST FRAENKEL.

Blood Transfusion Fatalities

SIR,—In the correspondence in the *Journal* following my report of six fatalities from blood transfusion (*Journal*, 1936, **2**, 1186) there are requests for further information, and many points, some directly arising from my paper, are raised.

These cases were collected at Guy's Hospital while I was a medical registrar there. The preliminary tests and the operations were performed by house officers with the following experience: in two cases, at least fifty previous transfusions; in one case, two previous transfusions; in three cases, between ten and thirty transfusions. With regard to technique, in all these cases the blood was taken into citrate (two to three ounces of 3.8 per cent. sodium citrate) in an open glass beaker immersed in hot water and transferred immediately to the recipient by tube and funnel. Unfortunately the case records do not give any indication of the rate at which the transfusions were actually given in these six cases. The custom at the hospital at this time was to take between twenty and forty minutes to run in a pint of blood.

Mr. Wilfrid Adams refers to the risk attached to transfusions in cases of peptic ulcer or neoplasm of the alimentary tract. If any conclusion can be drawn from five such fatalities (the sixth case was clearly the result of mistaken grouping), it is to be noted that in each case the haemoglobin percentage was under 40 and the anaemia was of some duration. In so far as patients with peptic ulcer or malignant disease of the alimentary tract may have secondary anaemias of this severity and chronicity, I should regard them as bad risks for blood transfusion in the light of these experiences. The risk is not nearly so great in cases with recent haemorrhage and anaemia, probably because the question of cardiac efficiency is of less importance in these cases. Six fatalities in two and a half years are rather alarming, but it should be mentioned that at this time (1930–32) about 500 to 600 transfusions were being given each year at Guy's Hospital, making a total of 1,500 to 1,800 in the three years covered. These figures are only a very rough estimate based on incomplete returns, so that they cannot be used for giving a percentage mortality. In the last three years the number of transfusions per year has fallen.

Referring to Case IV, with mitral stenosis and haemolytic anaemia, I entirely agree with Dr. Vaughan Facey that a very much smaller quantity of blood should have been given, and preferably none at all. I do not wholly agree with another statement of his that "reports of cases that have been transfused by inexpert operators can do nothing but confuse the issues." Throughout the country many transfusions are being performed by less experienced men and under less suitable conditions—of the results we never hear—and unless fatalities are put on record blood transfusion will continue to be used as "a harmless tonic," which it certainly is not.

As Dr. Vaughan Facey says, it is within the experience of most of us that patients have received repeated transfusions from the same donor without ill effect, but that severe reactions do occur is shown by Case V (I was not able to find any other record of such a fatality) and the references I gave in my paper. As it is presumably a question of anaphylaxis, one would not expect shock to occur in every case, or possibly in more than a few cases. The time element may be important. In the published cases the intervals between transfusions varied from fourteen days to eighteen months. I would, however, make a very strong plea for cross-agglutination tests before each transfusion from the same donor—a practice which is not at all general.

Several correspondents stress the importance of running the blood in very slowly, especially in cases of heart disease and chronic anaemia, and with this I am in entire agreement. The time taken must, however, be within the limits of the technique employed. With longer than forty-five minutes by the tube-and-funnel method the risk is run of too great a fall of temperature of the blood after it has traversed the length of rubber tubing, of coagulation, and possibly of other changes in the blood. From this point of view it would be interesting to learn the results of the slow-drip method mentioned by Dr. F. Graham Lescher, and of continuous-drip transfusion (after Marriott) in a large series of cases. The mortality of blood transfusion is so low (1 to 2 per 1,000 in published figures) that the results in a few hundred cases are of little statistical value.

In both Cases II and III the reaction started two hours after completion of the transfusion. It is difficult to believe that if the blood had been run in at half or twice the speed it would in any way have altered the severity or incidence of this delayed reaction. The ill effects of giving blood too rapidly can be due either to the sudden increase of blood volume causing embarrassment of the right side of the heart, or to high concentration of such factors as produce reactions. The mechanical effect of increase of blood volume would give symptoms during the course of the transfusion. Is it possible that the concentration of "anaphylactic" factors occurring in a very rapid transfusion would give such a delayed reaction two or more hours after cessation of the blood flow? Again, it is more probable that symptoms would develop during or immediately after the procedure. It seems

to be more likely, in these two cases, that the delayed reaction would have set in whether the operation had taken half an hour or one hour, and that the death from heart failure was a direct result of the strain of the reaction on a weakened myocardium.

As after a blood transfusion of one pint the haemoglobin percentage only rises by 8 to 12, it seems unlikely that "a further factor complicating transfusion reactions is the sudden raising of the haemoglobin percentage of the blood," according to Dr. Leigh Silver's theory.

Professor Baker and Professor Dodds, in connexion with a statement of mine on "our ignorance in regard to the renal changes" in cases of uraemia following blood transfusion, refer me to their experimental and chemical study of the question in the *British Journal of Experimental Pathology* (1925, **6,** 247). I had previously studied this excellent work with great interest, and I regret that lack of space did not allow amplification of my statement with reference to their article.

It seems to me, however, that the exact nature of the substance in the renal tubules still has to be determined, for although by experimental work in rabbits they produced a similar appearance in the kidney their exact analyses were concerned with a substance in the urine. Moreover, as these authors themselves say, a similar condition should often occur in paroxysmal haemoglobinuria—an objection which they explain in the following words: "It is reasonable to suppose that in paroxysmal haemoglobinuria and blackwater fever the amount of haemoglobin set free during any one attack is, as a rule, small compared with that liberated in a patient transfused with incompatible blood." To my mind this is an unreasonable assumption. Further, in some cases of death from uraemia following transfusion, showing the typical appearance of pigmented debris in the tubules, there is no evidence of haemolysis as shown by jaundice, or, in one case, even by van den Bergh tests (Witts, L. J.: *Lancet,* 1929, **1,** 1297; De Gowin, E. L., and Baldridge, C. W.: *Amer. J. med. Sci.,* 1934, **188,** 555; Bordley, J.: *Arch. intern. Med.,* 1931, **47,** 288).

—I am, etc.,

London, W.1, Jan. 4. N. S. PLUMMER.

SIR,—May I correct any misunderstanding that may exist regarding a side issue in my letter on blood transfusion fatalities (*Journal,* December 26, 1936, p. 1333). Transfusion of saline solutions by various methods has, of course, been used for some time; I believe, however, the particular method of blood transfusion described by Drs. Marriott and Kekwick, using more than one donor, to be the first of its kind, in this country or elsewhere. —I am, etc.,

A. L. LEIGH SILVER.

Medical Department, Royal Arsenal,
Woolwich, Jan. 3.

Prevention of Silicosis

SIR,—If a national industrial health service is ever established silicosis should be one of the first complaints to engage its attention. In the mortality tables for 1935 the number of deaths from "chronic interstitial pneumonia, including occupational diseases of the lung" is given as 367, but that modest figure should not be regarded as an index of the harm done by breathing particles of silica.

The coal miner is usually exempt from this disease, and yet the post-mortem appearance of a collier's lungs indicates that millions of particles of coal dust have become embedded in the lung tissue without any obvious disadvantage. In spite of popular opinion to the contrary, if we exclude deaths from accidents, it cannot be said that a miner's occupation is unhealthy. I write from experience, for I practised among them for twenty-one years. It is true they are shut off from sunlight; but they have many compensating advantages which need not be discussed here. In the mortality figures for the various trades and professions the miner occupies a good position. The statistics show that he lives as long as builders and commercial travellers. The question naturally arises, Why can a coal miner have his air cells bombarded with coal dust and take no harm, while a stone grinder ultimately dies from breathing silica dust? The usual answer is that the sharp particles of silica inflict minute wounds in the lung tissue and germ infection follows. That explanation is no doubt partly true, but it has never wholly satisfied me. I believe the immunity enjoyed from coal-dust penetration is largely due to its antiseptic properties. The bane and the antidote are administered together. When wounds are inflicted by silica there is no accompanying germicide.

If there is any truth in the suggestion just made obviously it might be possible to prevent the more serious consequences which follow the inhalation of silica particles by the simultaneous administration of a germicide. This, I believe, could be accomplished in a natural and unobtrusive way by iodizing the atmosphere breathed by workers who, by the nature of their occupation, are compelled to inhale dangerous dust. I think the plan is worthy of an extended trial in this country, and I would also like to see it tried out in one or two of the South African gold mines, where miners' phthisis takes such a heavy toll of the natives.—I am, etc.,

J. A. GOODFELLOW.

Kenwood, Chesterfield, Dec. 30, 1936.

Metabolic Factor in Rheumatism

SIR,—Dr. R. G. Gordon in his interesting article on the metabolic factor in chronic rheumatism (*Journal,* December 19, 1936, p. 1243) states his belief that the majority of cases of fibrositis are metabolic rather than infective in origin, and are due to minor degrees of thyroid inadequacy and to sympathetic dystonia, both of which conditions favour the deposition of "irritating metabolites" in certain tissues. That he does not indicate the nature of such disturbing bodies seems to imply that he has not isolated them, and surely they need to be isolated before they can be considered to hold a causative relation to the commonest of all "rheumatic" conditions. For fibrositis, if not universal in its incidence, is at any rate so extremely common that its cause is likely to be found among conditions which operate very widely. Infection is such a cause, and should not be neglected simply because the focal theory of infection often produces disappointing results.

I have put forward evidence to explain why the focal theory is of little practical value in the treatment of fibrositis, not because infection is ever absent but because the theory is inadequate to account for what is really happening. In a short paper on "A New Treatment of Fibrositis" in the *Journal* of February 15, 1936, I suggested that the primary focus is no more than the first stage of the disease, the portal whereby organisms gain entry to the circulation, and that the appearance of fibrositis denotes the further stage in which they have established outposts in the tissues. Such local collections of living organisms are self-sufficient and need no reinforcement for their continued existence or eventual spread to other parts. I further tried to show that the resolution of such "secondary foci" rarely takes place without adequate local treatment, by means of massage in slighter cases, and by means of oil-soluble chemicals and oil-

suspended vaccines locally injected in the more severe. In the same issue of the *Journal* Dr. T. Stacey Wilson, in his admirable "Manipulative Treatment of Fibrositis," showed that he had reached conclusions as to the pathology of fibrositis which were identical with my own, though attained by quite a different approach.

Those who give whole-hearted loyalty to the focal theory will no doubt find such an extension of it as irritating as Dr. Gordon's "metabolites"! But until Dr. Gordon can give more definite evidence regarding the chemical nature of such "metabolites" I shall still feel that my own is the safer heresy.—I am, etc.,

London, W.1, Jan. 1. G. LAUGHTON SCOTT.

Nervous Complications of Treatment by Gold Salts

SIR,—Dr. Graham Lescher's article on nervous complications following treatment by gold salts in the *Journal* of December 26, 1936 (p. 1303) is of great interest in view of the increasing use of gold in the treatment of rheumatoid arthritis. Perhaps an experience of mine with myocrisin would be of interest in the light of this article.

A female patient with a history of rheumatoid arthritis of many years' duration was treated with myocrisin (oily suspension) intramuscularly in doses of 0.01, 0.01, 0.05, 0.1, 0.2, and 0.3 gramme at weekly intervals. Following each injection she was given a drachm of calcium gluconate. The first course was started in January, 1936, and no reaction, complication, or untoward symptom was experienced. After an interval of four to five months a second course of injections of myocrisin of the same strength as before, but with a longer interval between the injections, was given. A short time after the last injection of 0.3 gramme the patient experienced: (*a*) great mental agitation, depression, apprehension, and fear of some unknown calamity; (*b*) insomnia; (*c*) excessive flushings and sweating; (*d*) fatigue; (*e*) twitching of muscles of trunk and limbs, called rigors by patient; (*f*) a choking feeling in the throat, with a stridulous inspiratory sound similar to laryngismus stridulus in children. This cleared up after one dose of veronigen.

I did not associate these symptoms with a gold reaction at the time, and would welcome Dr. Graham Lescher's observation on the case. Incidentally the rheumatism was much improved by the treatment.—I am, etc.,

Nevin, N. Wales, Dec. 30, 1936. H. HUGHES JONES.

Scurvy

SIR,—In the jubilee number of *Guy's Hospital Gazette*, in Dr. J. M. H. Campbell's "History of the Physical Society," Sir William Hale-White is quoted as saying many years ago with reference to papers read in the early days of the society, "Scurvy was often mentioned, for it was then a terrible scourge; but probably now not a single one of you has ever seen a case in England." In view of the great rarity of this disease the following case is, I think, worth recording.

An insured man, aged 48, came to my surgery on April 25, 1928, suffering from extensive purpura in both legs, which were oedematous, with severe haemorrhages into both knee-joints. The gums were spongy and the mouth foul. He was anaemic and looked very ill, and was only just able to drag himself the fifty yards from his home to my surgery. He refused to go into hospital. I found that his wife had died six months previously, so that he had been neglecting his food and had had no green vegetables or fresh fruits; he was, however, well nourished. I explained his trouble to him, ordering him plenty of vegetables and orange juice, with Fowler's arsenic and iron mixture.

On May 11 I wrote: "He has now had no fresh haemorrhages for some days, but is still very weak." May 25: "Improving, no fresh haemorrhages and old ones fading." June 15: "Looks a different man; healthy rosy colour; still slight oedema of ankles." June 29: "Signed off."

I saw a number of cases in the Balkans during the war, but all were trifling compared to this case, which when first seen was rapidly heading for a fatal termination. In private practice one comes across many patients who are "afraid to take vegetables or fruit" for fear of colitis or other digestive troubles, yet they somehow get sufficient anti-scorbutic vitamin to keep them entirely free from symptoms of scurvy, and it is rather astonishing that this man succeeded in cutting off his vitamin supply so successfully as he obviously did. It is interesting to note the rapidity with which his very serious condition improved.—I am, etc.,

A. A. GREENWOOD, M.B., B.S.

Godmanchester, Dec. 28, 1936.

Cold Treatment for Gonorrhoea

SIR,—British practitioners may be interested to hear the suggestion of a Cairo colleague, Dr. Moussalli. The local heat treatment of gonorrhoea has given disappointing results; Dr. Moussalli suggests cold. The gonococcus can be killed by cold even more effectively than by heat, and local irrigation of the urethra with a solution at 10° C. will produce, without damage to the tissues, a temperature of 15° C., fatal to the gonococcus. The heat treatment with a solution at 46° C. only produces a local temperature of 41° C., which does not kill the gonococcus. As I have no opportunity to test his assertion (that blenorrhagia can be cured in two days) I am writing to you in case your readers may be interested to try out this method.

Dr. Moussalli has also devised a very useful instrument for the coagulation by diathermy of the mucous membrane of the uterine cervix. This he demonstrated at the Congress of Surgeons of Paris in October, 1936. It is a two-point (platinum points 3 mm. apart) electrode, using a diathermy current at 300 to 500 milliamperes, capable of being rotated under control with a corkscrew-like guide, so that in five or six minutes, with no anaesthetic and by applications of two or three seconds four times for each complete rotation, the whole cervix can be disinfected and in six to eight weeks cured.—I am, etc.,

Demerdache Hospital, Cairo, Dec. 23, 1936. H. STIVEN, M.D.

Consistency of University Examinations

SIR,—Professor Major Greenwood (*Journal*, December 19, 1936, p. 1285) has slightly misunderstood the main purport of my paper. The results of my analysis do not, of course, in any way invalidate those of Hartog and Rhodes. On the other hand they do, I think, provide some reassurance that examinations in university subjects conducted by examiners who are actively engaged in teaching these subjects and who not only mark but also set the papers, are probably not so wildly unreliable as many people seem to think. In *Examination of Examinations* results are published relating to particular tests which have been widely and uncritically applied to other examinations of very different type and run on very different lines.

I fully agree with Professor Greenwood that, as published, my paper does not give adequate data for statistical purposes. Since ninety-seven correlations are concerned

it would, I fear, be asking too much to expect the Editor of this *Journal* with its wide—and hence relatively unspecialized—scope to publish ninety-seven correlation tables which would themselves occupy some twelve pages. A fuller analysis of the material is in progress under the auspices of the Scottish Council for Research in Education, and on completion it is hoped to publish all the relevant data.

Whether "ability" or "acquirement" is the more important character is a very controversial matter into which I must firmly decline to be dragged. As one of my colleagues has put it: "The examinations seem to be reliable tests, but *what* we are examining I don't know." I doubt whether this analysis can help us very much to clear up this particular point.

May I take this opportunity of correcting several arithmetical errors that crept into the correlations and to apologize for their occurrence.

1929-30: medicine/pharmacology, r = 0.45 not 0.50; medicine/therapeutics, 0.48 not 0.39; surgery/bacteriology, 0.54 not 0.59; surgery/pharmacology, 0.47 not 0.42; surgery/medicine, 0.55 not 0.49.

1930-1: pathology/bacteriology, 0.50 not 0.45; therapeutics/bacteriology, 0.45 not 0.50.

1933-4: medicine/therapeutics, 0.50 not 0.55; medicine/surgery, 0.55 not 0.60.

A number of minor errors amounting to less than 0.05 have occurred, but as they do not materially affect the argument it is scarcely worth detailing them here.—I am, etc.,

Pathology Department, University of Edinburgh, Dec. 29, 1936. W. GILBERT MILLAR.

A Milk Epidemic

SIR,—About the middle of November an epidemic of dysentery in Hong Kong was reported under prominent headlines in the newspapers in England. Details which have come recently by post show that the epidemic was caused by unpasteurized milk. The twenty-three patients who fell ill on November 8 and 9 were all drinking unpasteurized milk from one depot of one dairy. The epidemic ended rapidly on pasteurization of the milk supply. The organism was Shiga's bacillus. The cases were almost all young European children. There were seven deaths among the twenty-three.

About ten years ago there was an epidemic of typhoid in Hong Kong, and the medical officer of health was satisfied that it was caused by unpasteurized milk from one dairy. It is to be hoped that Hong Kong will insist on the continued pasteurization of its milk supply before a milk epidemic of cholera is added to its troubles, and that Bournemouth and other places will sit up and take notice.—I am, etc.,

Hassocks, Dec. 29, 1936. C. M. HEANLEY.

The New Journal Typography

SIR,—May I, through you, be allowed to congratulate the Journal Committee, Mr. Stanley Morrison, Mr. Eric Gill, and all others concerned in the very great improvement in the *Journal*? In my humble opinion—as a constant reader of it for many years—the results of the thought and care that have been given towards the improvement are in every way admirable.

I suppose that the striking red omega, surrounding the staff and serpent of Aesculapius, is meant to suggest that the *Journal* will still continue to expound the last word in things medical and surgical.—I am, etc.,

St. Ives, Hunts, Jan. 3. E. W. GOODALL.

SIR,—May I send congratulations on the new and greatly improved appearance of the *British Medical Journal*. The changes are to the good in every way, and happen to coincide, if you will permit me to say so, with a particularly readable and well-edited issue of the *Journal*.—I am, etc.,

Par, Cornwall, Jan. 2. CHARLES SINGER.

SIR,—You have given your subscribers to-day a splendid New Year's gift, and as one who has struggled for years with a typographical problem (but without achieving signal results) I offer my heartiest congratulations. You have set a new standard and have achieved a brilliant result; it is easy to see that the "Times New Roman" has outstanding merits, but it is quite another thing to employ the new type intelligently and effectively. With best wishes for your new format.—I am, etc.,

JOHN RICKMAN,
Editor, *British Journal of Medical Psychology*.

London, N.W.1, Jan. 2.

SIR,—May the editor of a much smaller professional weekly journal congratulate you most sincerely on the new format of the *British Medical Journal*? Only those who have actually thought out a revised lay-out know the months of work involved and the amount of co-operation required from the printers. I personally find the new type attractive, and, as you say, it is so much clearer and larger than the old, though the same sized body is used.—I am, etc.,

HILARY M. BLAIR-FISH, S.R.N.
Editor, *The Nursing Times*.

St. Martin's Street, W.C.2, Jan. 2.

SIR,—Those of us whose advancing years are plagued with progressive presbyopia will be deeply indebted to the Journal Committee, its board of management, and the editorial staff for the changes which have been introduced with the New Year. The type is admirable and easily legible, even in its smallest form. The *Times* has accustomed us to the aesthetic appeal of a plain type for headings, without any frills. The *British Medical Journal* has done well to follow its example in this respect. May I also congratulate you on the external appearance of the *Journal*, the colour and lay-out of the cover and Mr. Eric Gill's device on the front page being especially effective.

I have, however, one criticism to offer which has nothing to do with the new type. On page 33 of your issue of January 2 you print a note for contributors for their guidance as to bibliographical references. The system is excellent. If we ever have the temerity to write an article with references the number of the volume of each publication is to be inserted. What are we to do if we refer to the *British Medical Journal*? Is it not a pity that with this new issue and this New Year the *Journal* has not been issued as a new series, this being the first issue of volume Number 1.—I am, etc.,

Cardiff, Jan. 2. RALPH M. F. PICKEN.

*** We can only find space for a few of the many letters of congratulation which readers are kind enough to send. In reply to Professor Picken's question, references to the *British Medical Journal* should give the page number and year, and the numeral **1** or **2** to indicate the half-yearly volume of that year.—ED., *B.M.J.*

Medico-Legal

ARTIFICIAL INSEMINATION

SOME LEGAL ASPECTS IN THE U.S.A.

The practice of artificial insemination in order that the wife of a sterile husband may bear a child is rare in this country, but has attracted some attention in America. Dr. Frances Seymour and Dr. Alfred Koerner in an article in the *Journal of the American Medical Association* of November 7, 1936 (p. 1531) point out a number of legal complications which they think may occur if the method comes into widespread use. Naturally there has been no judicial decision on the matter, and conclusions can only be drawn by inference from established principles of law.

The authors do not consider that artificial insemination can be adulterous, for by the law of New York State adultery is a physical relationship. Nevertheless they insist that the husband should give a written consent in a prescribed form and that the wife should sign on the same form a declaration that she joins her husband in the request for the operation. They also insist that both husband and wife shall make a finger-print opposite their signatures.

REASONS FOR PRECAUTIONS

These precautions are taken to safeguard the medical practitioners from a subsequent assertion by the wife that she did not know what was going to be done, and in order that the man whom the woman presents as her husband shall be identified. They insist on examining the man to make sure he is sterile; this makes it more likely that he is the husband and not some third party whom the woman has introduced in order to procure insemination under false pretences. Both husband and wife are required to swear to their written consents before a notary. Two copies are prepared, and these are deposited with two separate banks, and forgotten unless a legal complication should arise. Under the law of New York State these consents legitimize the child and establish it as the legal heir of the family unit. The authors fear that if these papers were not in existence the husband, tiring of his wife after some ten years, might be able to obtain a divorce by showing that he had always been sterile and denying the wife's story that he had assented to her artificial insemination. In this country it is doubtful whether a court would grant him a decree. He would first have to explain why he had delayed so long in bringing the proceedings. He could bring medical evidence that he was sterile, but he would not be allowed to say in evidence that he had not impregnated his wife, for that would be bastardizing an apparent child of the marriage by giving evidence of non-access. The wife might also plead that even if she had borne the child by another man, the husband had condoned the hypothetical offence by subsequent intercourse with her. Even without such papers, the child of an artificial insemination would in this country be by law a child of the marriage.

CONSIDERATIONS IN ENGLISH LAW

The question of inheritance is more important in the United States than in this country, where there is now no heir-at-law. The child of an artificial insemination could not be disinherited without an action of a quite unprecedented kind, based on lack of knowledge and consent by the husband. The American authors consider that the wife of the donor must give written consent to protect her husband from a charge of adultery brought by her. It is difficult to see why artificial insemination should be adultery by the donor if it cannot be adultery by the recipient, and in this country it seems hardly possible that a court could rule that it constitutes adultery by either party, for adultery does not consist in the begetting of a child, but in irregular sexual intercourse. The chief consideration in English law must probably be the consent of the husband and wife, given with full understanding of the implications of the procedure. There will be more likelihood of an action for malpraxis or conspiracy than of a petition for divorce.

Universities and Colleges

UNIVERSITY OF LONDON

A course of lectures and clinical instruction for medical practitioners on mental deficiency and allied conditions has been arranged by the University Extension and Tutorial Classes Council in co-operation with the Central Association for Mental Welfare, from April 12 to 24. The course will be based on the requirements for the University of London diploma in psychological medicine, and is intended for qualified medical practitioners, more especially for those who are engaged as school medical officers, certifying officers to local authorities under the Mental Deficiency Acts, or as medical officers of institutions, or who are otherwise definitely concerned with the care of subnormal or abnormal persons. This course constitutes Part I, and has been extended to a fortnight in order that considerable time may be given to practice in mental testing under the supervision of a psychologist. Part II, devoted to the problems connected with the retarded and difficult child, formerly held immediately after Part I, will this year be held in the autumn. Particulars will be sent out in July. The University will grant certificates of attendance to those who have attended regularly, taking both theoretical and practical work. All communications should be addressed to Miss Evelyn Fox, c/o University Extension Department, University of London, W.C.1.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

The course of lectures for 1937 is arranged as follows: January 15, Mr. Laurence O'Shaughnessy (opened by Viscount Dawson of Penn), The treatment of cardiac ischaemia; January 18, Professor Evelyn Sprawson, Odontomes; January 20, Professor Russell J. Reynolds, Movements of the oesophagus, stomach, duodenum, and ileum during the passage of an opaque meal; January 22, Professor A. S. Kerr, The higher autonomic control of the hollow viscera; January 25, Professor S. Zuckerman, Tissue specificity in relation to sex hormones; January 27, Professor S. Zuckerman, The interrelation of endocrine and neuro-vascular factors in the menstrual cycle; January 29, Professor Cecil P. G. Wakeley, The surgery of the parapituitary region; February 1, Professor Philip Wiles, Postural deformities of the spine; February 3, Professor Philippa Martin, The effect on the eye of radium used for treatment of malignant disease in the neighbourhood; February 5, Professor J. H. Saint, The bipp method of treatment of acute osteitis; February 8, Professor A. R. D. Pattison, Cushing's syndrome; February 10, Professor D. W. C. Northfield, Some observations on headache; February 12, Professor F. H. Bentley, Experimental nerve anastomosis; February 15, Professor G. E. Gask, John Hunter in the campaign in Portugal, 1762–3 (an account derived from the Loudoun letters recently acquired by the College); February 22, Mr. David Slome, The nervous factor in traumatic shock. All the lectures begin at 5 p.m., with the exception of Professor Gask's on February 15, which commences at 4 p.m.

The Services

HONORARY PHYSICIAN TO THE KING

Surgeon Captain L. S. Ashcroft, V.D., R.N.V.R., has been appointed Honorary Physician to the King, as from January 1, in succession to Surgeon Captain J. B. Ronaldson, V.D., who has vacated the appointment.

COLONEL COMMANDANT, R.A.M.C.

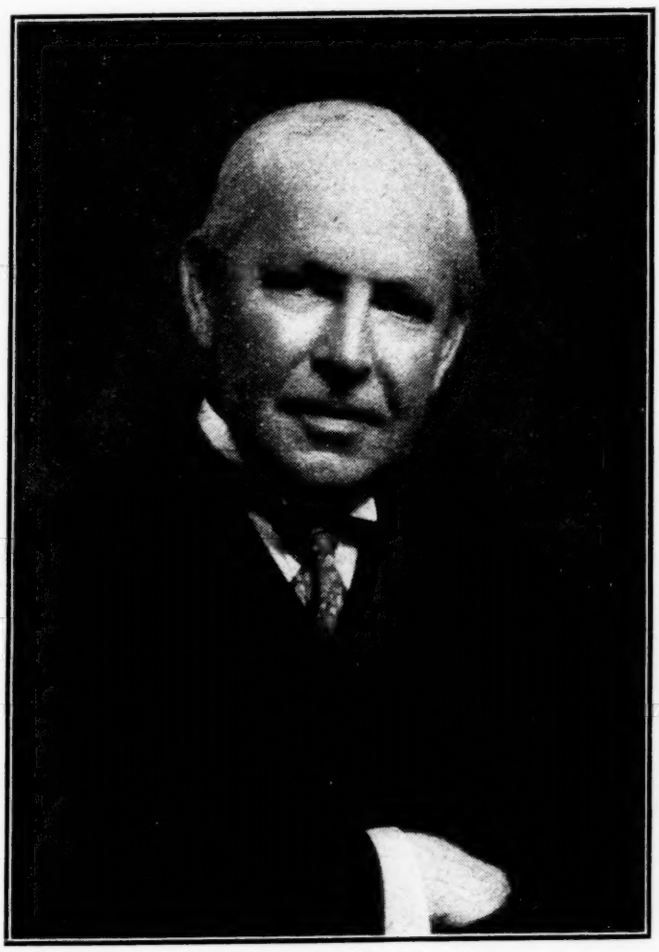
Major-General W. H. S. Nickerson, V.C., C.B., C.M.G., has been appointed Colonel Commandant Royal Army Medical Corps.

Obituary

SIR GRAFTON ELLIOT SMITH, M.D., F.R.S.

LITT.D., D.SC., F.R.C.P.
Emeritus Professor of Anatomy, University College, London

Grafton Elliot Smith, born at Grafton, New South Wales, on August 15, 1871, was the son of the local schoolmaster, a Colonial of English and Welsh stock. In 1888 young Elliot Smith entered the newly founded medical school in the University of Sydney, where he was fortunate in attracting the attention of Anderson Stuart, the professor of physiology, and J. T. Wilson, the professor of anatomy, two zealous missionaries from the Edinburgh school. Sir Anderson Stuart became the doyen of Australian medical circles, and J. T. Wilson is now emeritus professor of anatomy at Cambridge. After graduating as M.B., Ch.M. in 1892, Elliot Smith held various hospital house appointments, and in 1894, when appointed demonstrator in anatomy, began his active career as anatomical teacher and investigator. His facility, intuitive genius, and flair for the obvious may be seen in the four papers published in 1894. They dealt with a hydatid cyst in a congenital hernia, the significance of certain rare nerve, muscle, and vascular anomalies, and the cerebral commissures of the mammalia, with special reference to the monotremes and marsupials.



Elliot Smith was now definitely devoted to anatomical research, and in 1895 he published, in addition to his thesis for the doctorate on the anatomy and histology of the cerebrum of non-placental mammals, eleven papers dealing with the morphology of the brain. Thus at 24 years of age he established a European reputation which was based on his clear and lucid presentation by text and illustration of the evolution of the cerebrum and cerebellum, and of the part played by olfaction. His early associates in Sydney were Sir Almroth Wright, Sir Charles Martin, and Professor J. P. Hill. A goodly company!

In 1896 Elliot Smith obtained the first travelling Fellowship from Sydney University, and came to the British Isles to seek bench space for his research. It says much for Alexander Macalister, then professor of anatomy at Cambridge, that he welcomed Elliot Smith as a "research student." Elliot Smith in later years spoke with feeling of the lack of facilities for post-graduate workers in the Old Country. Oxford University would not accept him without the traditional test in Latin and Greek. Fortunately he found the sister institution at Cambridge more easily satisfied. Almroth Wright and Donald MacAlister were then in Cambridge, and piloted him through the maze of university and college ritual, so that he was admitted to St. John's College.

During the Cambridge phase Elliot Smith began to revolutionize neurology. He pestered Professor Macalister for a microtome, and eventually drove him to such desperation that he thrust his hand into his pocket and threw a handful of sovereigns, recently collected as students' fees, upon the bench. Elliot Smith bought a Cambridge "rocker," and startled the topographical anatomists by cutting brain sections in the physiology department. At this time the anatomy department housed Macalister, Alexander Hill, Duckworth, and Barclay Smith; the physiology department, Hugh Anderson, Gaskell, W. B. Hardy, Langley; and zoology, Bateson, Heape, and Brindley; while Sherrington in Liverpool, Mott, Sharpey-Schafer, Horsley, and R. H. Clarke at University College, London, were intensively engaged on the physiology of the nervous system. Elliot Smith pursued his own line of research, and from 1897 to 1900, besides publishing eight papers dealing with cerebral morphology, he undertook the preparation of the descriptive catalogue of the brain collection in the Royal College of Surgeons, a work destined to be a monument to his original powers of observation and a source-book for a generation of research workers in anatomy and physiology. His salary as demonstrator of anatomy was £50 a year. In 1899 St. John's College recognized his researches in cerebral morphology by electing him to a Fellowship within three years of his admission to the college.

In 1900 Elliot Smith left Cambridge to become the first occupant of the chair of anatomy in the new Government Medical School at Cairo. The acceptance of this post profoundly influenced his future work and interests. Many would wish that he had continued to work in Cambridge and had confined himself to his fruitful researches in neurology instead of becoming involved in additional spheres of interest. However, Elliot Smith, in addition to a missionary zeal, was endowed with that type of scientific inquiry and judgement which, to quote Montaigne, is "a tool adapted to all subjects and meddles with everything." During the nine years he spent in Egypt he founded an active department of anatomy, continued his neurological and anatomical researches, and

became an indefatigable critic of the existing methods pursued by anthropologists, Egyptologists, and classical scholars. He published about fifty papers on anatomical subjects, described the brains of living and extinct forms from whales to lemurs, surveyed Nubian cemeteries and royal mummies; became interested in the origin and practice of mummification and the religious beliefs and customs of the ancient Egyptians. He spent his vacations with Maspero, director of Egyptian antiquities, Sir Armand Ruffer, Wood Jones, and others, and began publication of the anatomical reports of 20,000 burials, undertaken by the Archaeological Survey of Nubia. Much of our knowledge of ancient customs and of palaeopathology we owe to his astounding energy. In 1907 he was elected a Fellow of the Royal Society.

In 1909 Elliot Smith succeeded Young in the chair at Manchester. He soon became involved with Rivers and W. J. Perry in the problems of the early origins of magic and religion and of the early migration of man. This collaboration led to that gradual unfolding of the doctrine of diffusion of culture from ancient Egypt which brought Elliot Smith into antagonism with so much of existing ethnological and anthropological tenets. That vigorous process of thought, with an occasional smashing and devastating blow at existing beliefs, made Elliot Smith beloved of the younger men, but anthropologists and historians trained in the ponderous circumlocution of the classical tradition did not suffer gladly. He was merciless to "the active privy counsellors of the board of confusion." His belief in the newer inductive methods of human biology ran counter to the traditions of the deductive school of Descartes—helplessly attempting to fit man's activities into the laws of nature.

While pursuing these varied lines of work the discovery of Piltdown Man brought Elliot Smith into close contact and occasional differences with Sir Arthur Smith Woodward and Sir Arthur Keith. Amidst this welter of work he delivered the Arris and Gale Lectures before the Royal College of Surgeons on the evolution of the brain in 1909, served on the General Medical Council from 1913 to 1919, collaborated with Rivers and T. H. Pear in the treatment of shell-shock during the great war, fired the Manchester Literary and Philosophical Society with his radical outlook, received the Royal Medal of the Royal Society in 1912, and delivered the Croonian Lectures at the Royal College of Physicians in 1919 on the significance of the cerebral cortex.

In 1919 the late Ernest Starling persuaded Elliot Smith to accept the chair of anatomy at University College, London, in succession to Sir George Dancer Thane. From 1919 to December, 1932, when he was partially incapacitated by a stroke, Elliot Smith threw himself into the activities of the new Institute of Anatomy made possible by the munificent benefaction of the Rockefeller Foundation. He put into practice his views on the significance of anatomy. Special practical courses in histology, embryology, neurology, and radiological anatomy were instituted. Physical anthropology and, to a certain extent, cultural anthropology were taught and fostered. Active liaisons were formed with University College Hospital and with the prosectorium of the Zoological Society. He scattered his demonstrators to chairs in the colonies; he attracted post-graduate research workers; he welcomed colonial resident magistrates, medical officers, and men of varied interests. He championed John I. Hunter and Royle of Sydney when they revived interest in the sympathetic system and its surgery. He became the interpreter of discoveries in relation to the early history of man. He stimulated research in so many fields, and prepared his assistants to profit by the unexpected. Dart in South Africa discovered the Taungs ape, Davidson Black in Pekin the Pekin skull. He visited America, Indonesia, Java, and China. In each place he was the missionary, and was largely responsible for winning the interest of the Rockefeller Foundation in anthropological and anatomical research in China, India, and Australia.

His publications in anthropology, Egyptology, and ancient history continued, and he became the centre of many a storm. From 1932 until his retirement from the chair of anatomy in September, 1936, he contended cheerfully with much disability. As a scientist he rated the honorary Fellowship of St. John's College as highly as his Fellowship of the Royal Society. His services to the Empire and to the world of science were graciously recognized by the bestowal of a knighthood in 1934. On January 1, 1937, he died at Broadstairs, and was cremated on January 5 at Golder's Green, London.

Sir Grafton Elliot Smith by constitution and upbringing was magnificently prepared for the brief largeness of life. His intuitive genius was equalled only by his kindness and generosity to the young anatomists, physiologists, and anthropologists on the threshold of a career. He was a handsome figure of a man, endowed with charity and good humour, affectionate to the unfortunate, generous to the point of self-neglect. To have lived and worked in the closest association with him from 1919 to 1934 was one continuous post-graduate course in human biology in the broadest sense of the term. The breadth of his erudition is shown in *Essays in Evolution* (1927) and *Human History* (1930); his provocative acumen in *The Evolution of the Dragon* (1919) and *Elephants and Ethnologists* (1924).

When honours fell thick upon him from various societies at home and abroad he remained the same simple soul, delighted with a story, intrigued by any sign of radicalism in medicine as a whole, ready to discuss the prophecies of Ezekiel and the Psalms or the latest portrayal of tribal customs on the films. His boyish interest in all his students, demonstrators, and friends, his regard for the technical staff, his kindness to the man in the street; Twickenham on the day of an International or the university Rugger match, the lecture to a working-class audience, the hand extended to anyone in trouble—these are the things which come to mind. His genial qualities and happy family life earned him the friendship of a wide circle of friends, and his innate modesty served as a continuous brake upon some of his younger associates.

In saying farewell to Elliot Smith one mourns not only the loss of a great master but the passing of a kind and generous soul whose desire was ever to enrich by laboratory research the wide and cheerful stream of life. He was not afraid of being rebuked by the academically minded for encroaching upon foreign ground, for he had too often experienced that though the roots of a solid undertaking may be bitter the fruit may be sweet. He had a keen eye for engravings and etchings, and was interested in the first anatomical woodcuts. His knowledge of the art of Egypt and Indonesia was unique. His familiarity with the voyages and travels of ancient times, his astounding visual memory, his ability to throw life into inanimate objects and bring them into unexpected relations, made a lasting impression on all who were fortunate enough to pick a few of the crumbs which ever dropped from his table.

H. A. H.

[The photograph reproduced is by Elliott and Fry, Ltd.]

We are indebted to Sir ARTHUR KEITH for the following appreciation:

In the last fifty years the outlook and methods of British anatomists have been transformed; in this transformation—or reformation—Elliot Smith has had a greater share than any other man. Nearly all the younger anatomists who have made a mark or who are now gaining distinction are directly or indirectly influenced by his teaching and example. He could use scalpel, forceps, and pen as well as any of the older anatomists, but to these more primitive instruments of research he added the technical methods, which were being developed in microscopical laboratories during his youth. He modelled himself on Huxley rather than on Turner.

His career has many elements of romance in it. It exemplifies one of the many bonds which are helping to give unity to the peoples which form the British Commonwealth. It is often said that our King is our only bond, but this is not so; there are many others. Elliot Smith was born and bred in New South Wales; when his State began to build a university in Sydney it picked its professoriate from the home country. J. T. Wilson, who became Macalister's successor in Cambridge, went out from Edinburgh to fill the chair of anatomy. Under his influence there grew up a succession of young anatomists in Sydney—the most brilliant being Elliot Smith. Another was the Sydney John Hunter.

Cambridge made the next step in his career possible. Fully forty years ago statesmanlike minds of that ancient seat of learning took a step which made their university truly imperial by providing opportunities which made it possible for any budding geniuses of the Dominions to seek development in their laboratories. Rutherford was one and Elliot Smith was another of the young men who seized the opportunity thus offered; and there were many more.

Cambridge supplied a laboratory bench, but the subject of investigation and the methods employed he brought home with him. No one watching him then unravelling the finer anatomy of the marsupial brain could believe that he was on the right road to throw a flood of light on the structure of the human brain. But it was so. He had grasped, as so few had then done, that evolution was a truth and that the mammalian brain was a real unity, framed and fashioned on the same pattern from lowest to highest, and the lowest and simplest gave clues to the highest and most complex. He perceived that the mammalian brain had originally been a "small" brain. This clue he followed with a success which is known to all anatomists.

The museum of the Royal College of Surgeons of England provided the material for his next advance. It had an unrivalled collection of brains of Primates, besides many other classical specimens which had been prepared and studied by that prince of anatomists Richard Owen. At the suggestion of Professor Charles Stewart, then conservator of the museum, the Council of the College invited Elliot Smith to prepare a catalogue of the brain series. The result was a descriptive catalogue which became a classic and is still the best textbook on the mammalian, and especially the Primate, brain.

Imperial connexions provided him with his next opportunity—Egypt. Soon after his arrival in that country Reisener was exposing the contents of cemeteries which were to be submerged under the water of the Nile above Aswan. Hundreds of skeletons of people representing the population of the valley at all stages of its history were being exposed. He went there in vacations and was joined by Wood Jones, now of Melbourne, and they threw themselves into their work of examination and recording with zest. A side issue was a close observation of the evidence of disease and injury. The unique collection of pathological specimens, illustrating the diseases and injuries of the ancient Egyptians, now in the museum of the College of Surgeons, is one of the fruits of the toil of these two anatomists. Elliot Smith's interests were too wide to be confined within the limits of strict anatomy. He became interested in the civilization of Egypt as recorded in her ancient graves. He was gradually led to formulate the theory that Egypt was the cradle of human civilization.

Then came Manchester. There he built up a double school—one of neurology; the other of human culture—championing the theory that civilization has spread always from a centre. And he fought with a bludgeon—for he was Huxleyian in his methods of warfare. Then came the last stage—University College, London, and the building up of an anatomical institute on modern lines. Here he developed his two former loves—brain and culture—and added a third—the history of mankind as evidenced by human fossil remains. No one ever accomplished so much with so little evidence of hurry or of effort. His body and his brain are now dead, but his influence and his example will live in our British school of anatomy for many a century to come.

J. T. DUNSTON, M.D.

Late Commissioner for Mental Hygiene, Union of South Africa

News has reached this country of the death at Bellair, near Durban, of Dr. John Thomas Dunston, for many years medical superintendent of the Pretoria Mental Hospital and commissioner for mental hygiene to the Union of South Africa. He was born in Lincolnshire in 1875 and studied medicine at Guy's Hospital, where he won an entrance scholarship in science, obtaining the English conjoint diplomas in 1899, the M.B. and B.S. degrees of London University in 1900, and the M.D. in 1901. After three years as house-surgeon and in special appointments Dr. Dunston entered the London County Council Mental Hospital Service. In 1905 he sailed for South Africa on appointment as senior assistant physician to the Pretoria Mental Hospital, becoming physician-superintendent in 1907. In 1914 he was made inspector of mental hospitals under the South African Government, and two years later commissioner for mental hygiene. His period of duty as commissioner was a most important one in the history of the treatment of mental diseases in the Union.

Notwithstanding the many claims upon his time and energy Dr. Dunston held various other appointments, many of them honorary. He was the first professor of psychological medicine in the Witwatersrand University, neurologist to the Pretoria Hospital, consulting psychiatrist to the Transvaal Education Department, and neurologist and psychiatrist to the Transvaal railways; he was also for many years consulting psychiatrist to the Union Department of Education and medical inspector of leper institutions. The main clauses of the Mental Diseases Act of 1916 had been drafted under his guidance, and in all problems of preventive treatment for mental and psychological aberrations he was recognized as a broad-minded advocate of the modern point of view. The strong attitude he took before the Union Education Commission in 1923 and his advocacy of special classes and special treatment for retarded children are bearing fruit in South African educational policy. A man of singularly modest disposition Dr. Dunston never sought publicity. He joined the British Medical Association in 1911, and

was appointed a member of the Union of South Africa Medical Council in 1928. He retired from his official posts in 1932.

HARRINGTON SAINSBURY, M.D., F.R.C.P.

Consulting Physician, Royal Free Hospital, and City of London Hospital for Diseases of the Chest

Dr. Harrington Sainsbury who died in his eighty-fourth year on December 29, 1936, was formerly well known in the medical world of London as an authority on diseases of the heart and lungs.

He was born on May 23, 1853, and after school days on the Continent studied medicine at University College, London, graduating M.B.Lond., with honours in forensic medicine, in 1879, and proceeding M.D. a year later. He obtained the M.R.C.P. in 1881, and was elected F.R.C.P. in 1892. Dr. Sainsbury was for many years physician to the Royal Free Hospital and to the City of London Hospital for Diseases of the Chest; he was also examining physician for the Royal National Hospital for Consumption and Diseases of the Chest at Ventnor. He served for some years as examiner in medicine for the Society of Apothecaries of London.

A scholarly writer with a genuine love of science, his best-known works were *Principia Therapeutica*, a book published in 1906, *Drugs and the Drug Habit* (1909), *The Heart as a Power Chamber* (1922), and *The Cardiac Cycle* (1931). The last of a number of papers contributed to these columns was "State of the Artery and the Circulation under the Sphygmomanometer Cuff During Compression," in our issue of February 2, 1929. Under the name of Hillel Samson he wrote three short romances, two of which were published at the Cayme Press by his son.

Dr. Sainsbury joined the British Medical Association at the beginning of 1881. He did good work during the war at Richmond and Bermondsey, and at the Military Hospital in Endell Street. For these services he received the O.B.E. in 1919.

SIR JOHN BLAND-SUTTON

Professor LAMBERT ROGERS writes:

It is a very curious thing—and incidentally this phrase was a favourite opening of Sir John's when he was about to refer to something which interested him—that although several excellent accounts of his life and work have appeared there have been but few stories of those personal contacts which might portray his distinctive personality to those who knew him only from the benches of the lecture theatre or from his vivid writings.

When in the dissecting-room I was tempted one afternoon by some of my co-dissectors to cross over to the hospital to see Bland-Sutton operating. As I had only once before seen an operation performed the whole scene remains clear-cut in my memory. The patient was on the table, the anaesthetist at work, the assistants and theatre staff grouped around, when very quietly a rather stout little man, wearing glasses, button-up boots, and a short-sleeved gown which displayed bare arms above his rubber gloves, entered the theatre. He had opened the door himself, turning the handle by grasping it through a shield made by picking up a fold of his gown. He walked straight to the patient, picked up a scalpel, made a single midline incision into the peritoneum, and putting in his little hand—he wore only a size 6 glove—produced a large ovarian cyst, and looking up to us remarked: "There it is, gentlemen, as large as a football." Later it was my privilege to become one of his dressers. His teaching was characteristic. He never "spoon-fed" us, but as I realize now tried to instil into us the power of observing. He would come to a patient and say, "Who is the dresser of this case?" One of us would reply "I am, Sir," Sir John would then say "Read the notes," and he would listen carefully, only very rarely making any comments until the dresser finished, when he would ask him, "What do you think it is?" To whatever reply the dresser made Sir John would say, "We'll see on Wednesday" (or Saturday, these being his operating days). He had, of course, already studied the case, concluded his examination, and formed his opinion, but in not dogmatically discussing the points with us he taught us to observe for ourselves and to correlate our findings with what was displayed by him on Wednesday or Saturday.

I do not remember ever seeing him laugh; a twinkle of amusement might just be caught in his eyes at times, but this is doubtful, and a fellow dresser with me once said: "He is like a sort of idol: his face is always the same." He would stop in the course of the ward round to ask if we had ever dissected an orchid or to present each of us with a little copy of one of Shakespeare's plays, and as he handed me *King Lear* he remarked, "Are you leary enough to read *King Lear*?" I recall a ward sister's consternation when followed by "the firm" he wandered one afternoon into the infants' ward, and after looking at several babies said: "They are exactly like little gorillas, Sister."

He often used to tell us not to do as he did; the reason being, I think, that his methods were frequently unconventional, and while safe in his expert hands might have been dangerous in the hands of those who were inexperienced and less familiar with operative surgery. As he opened the abdomen with one sweep of his scalpel he would again and again say to those of us around him "Don't you do as I do." When operating on the kidney one day I remember his asking, "Do you ever think when your breakfast kidneys are tough that the animal probably had chronic interstitial nephritis?" Another favourite comment on the kidney was that you could get on without brains but not without kidneys.

Bland-Sutton's name occurs in textbooks of descriptive anatomy in connexion with the Y-shaped ligament at the ankle, also known as the fundiform ligament of Retzius, and in connexion with accessory sphenoidal ossicles, which have been termed "ossa Bland-Suttoni." It will be remembered widely in comparative anatomy, in pathology, and in surgery, but those of us who were his dressers and came near to knowing our great imperturbable chief will remember him with pride, with affection, with wonder for what he was, and with gratitude for having had the opportunity of serving with him.

Mr. GORDON GORDON-TAYLOR writes:

Perhaps a few lines may still be spared to one who was an old assistant surgeon of Sir John Bland-Sutton at Middlesex Hospital, and who chances to be in surgical charge of the ward in the hospital which bears the name of the distinguished surgeon whose death we deplore. From former colleagues and from other distinguished surgeons who had come under his spell appreciative notices have already appeared in your columns, penned in words far more eloquent than mine; but none, I think, has done quite full justice to the really extraordinary dexterity, the craftsmanship, and the operative celerity of the man, more especially in the surgery of the female pelvis, the branch of surgery which, as has already been pointed out by others, he did much to found and which he advanced and adorned.

For many years I rarely missed his Saturday operating afternoon at "Middlesex"; he came at 2 o'clock and left precisely at 4, having completed his regular quota of four "coeliotomies" for conditions as varied as a pathological spleen, a hydatid cyst, a cervical fibroid, or a cancerous colon. He would have been the first to insist how much the afternoon's work had been expedited by the co-operation of his anaesthetists, formerly the late H. Percy Noble and in the last fifteen years of his time at "Middlesex" by his loyal and devoted friend Raymond Apperly. None of his old house-surgeons, dressers, or the spectators will ever forget his resource, his tricks of technique by which he facilitated the delivery and removal of formidable pelvic tumours, his sang-froid and self-reliance in unexpected crises, his urbanity, and his unfailing courtesy whatever the emergency that might well have alarmed. If celerity at times led to error none could have been more rapid to detect mistake or more speedy to make a quick decision and to rectify. It required courage to open a bleeding extra-uterine pregnancy without anaesthesia in a bed in a private house, to withdraw the gravid tube and to clamp it, while preparations were then made to deal more deliberately with the condition, and his success in removing the spleen in severe cases of pernicious anaemia long before the days of blood transfusion and of our present knowledge of medical therapy for this disease made his colleague Dr. Essex Wynter regard surgery as the appropriate treatment for this malady.

Although his warmest admirers cannot be blind to his technical imperfections in the surgery of the upper abdomen when judged by modern standards, it must nevertheless be remembered that he was the second British surgeon to perform a successful choledochotomy, and nearly a quarter of a century ago he was practising gastro-duodenal resection for non-obstructive duodenal ulcer. Neither the "cranial box" nor the "thoracic cage" attracted him, although he did develop an interest in the surgery of the heart; his interests were centred in the "abdominal valise," and he was at his very best in its lower region.

His genius for friendship and for hospitality has been already referred to, but his kindliness and generosity to the very junior may perhaps not be so well known, for in many instances his right hand knew not what his left hand was doing.

Dr. GEORGE HENRY BURFORD, who died on January 3 after a brief illness, was born at Didsbury in 1856. He had a distinguished student career at the University of Aberdeen, obtained the degrees of M.B. and C.M. in 1881, and continued his studies in London, Vienna, and Berlin. Soon after graduation, and while holding resident posts in Manchester and elsewhere, he began to take a deep interest in homoeopathy, and in 1890 was appointed physician for diseases of women to the London Homoeopathic Hospital, having been elected a Fellow of the old British Gynaecological Society two years earlier. He joined the British Medical Association in 1883. Dr. Burford served as president of the British Homoeopathic Society in 1901 and of the British Homoeopathic Congress in 1904; he also presided over the International Homoeopathic Congresses of 1911 and 1927. He had practised in Queen Anne Street for more than forty years, and last month a testimonial in celebration of his long and prominent connexion with homoeopathy was organized by a number of professional colleagues and other friends, the presentation being made on his eightieth birthday by Sir George Wyatt Truscott, formerly Lord Mayor of London. Dr. Burford leaves a widow and three sons, of whom the eldest is Dr. Harold George Burford.

Medical News

We publish this week in our advertisement columns notices from the University of Oxford inviting applications for the Nuffield Professorships of Clinical Medicine and Obstetrics and Gynaecology. Applications must reach the registrar of the University by April 17. The salary in each case is £2,000 per annum.

A sessional meeting of the Royal Sanitary Institute will be held at the Castle, Shrewsbury, on January 22, at 4.30 p.m., and on January 23, at 10 a.m., in conjunction with the Midland Centre of the Sanitary Inspectors Association. There will be discussions on "Shrewsbury's New Water Supply Scheme," on "School Heating," on "Administrative Units of Local Government," and on "The Housing Act, 1935: Practical Administration."

Mr. Philip Franklin will lecture before the Vienna Phonetic Society on January 21 on the evolution of speech in the deaf-mute baby—the method used in the research clinic for deaf mutes at the Infants Hospital, Vincent Square, Westminster.

The tenth congress of the Far Eastern Association of Tropical Medicine will be held in Hanoi in March, 1938, and not 1937 as previously announced.

The first issue of the *Practitioner* for 1937 appears in a revised format and is printed in a different type, changes which will be readily appreciated by the reader. A special symposium on gynaecology in the January number includes articles by Mr. Victor Bonney, Professor F. J. Browne, Mr. Wilfred Shaw, Professor Amy Fleming, Professor O'Donel Browne, and Mr. V. B. Green-Armytage.

Dr. Thomas Bell, J.P., of Loughborough has received a presentation of a silver salver, etc., from patients and friends on his retirement after thirty-four years' practice at Shepshed.

On December 15, 1932, the Minister of Health issued a memorandum on acute poliomyelitis. This has been revised in the light of present-day knowledge, and in its amended form (Memo. 166/Med.) is obtainable through any bookseller from H.M. Stationery Office, price 2d.

The Medical Society of Vienna will celebrate the centenary of its foundation in conjunction with the Union for Post-Graduate Instruction from May 19 to 29. A full programme will shortly be published.

A committee has been formed at Vienna to celebrate the centenary of the birth of Professor Leopold Schrötter Ritter von Kristelli on February 5, 1837, a pioneer in laryngology and rhinology and the sanatorium treatment of tuberculosis, who died on April 22, 1908.

Dr. Fritz de Beule, professor of clinical surgery at Ghent University, has been elected president of the Royal Academy of Medicine of Belgium for 1937.

The editorial committee of the ninth International Congress of Dermatology and Syphiligraphy, held at Budapest in 1935, gives notice that publication of the proceedings will require more time than was at first supposed, and will probably not occur until August.

Dr. Luigi Costa, who recently died at Buenos Aires, has left 300,000 pesos for the erection of two wards in the Institute of Experimental Medicine, directed by Professor Roffo, for the study and treatment of cancer.

The incidence of syphilis in the French home army has risen from 4.79 per 1,000 in 1924 to 8.71 per 1,000 in 1933, the last year for which statistics are available. This rise is traced in large part to the quartering of native troops in France.

Infantile paralysis has recently been made a notifiable disease in Switzerland.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone, unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

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All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

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The TELEGRAPHIC ADDRESSES are
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QUERIES AND ANSWERS

Nocturnal Cramp

"BETA" writes: Forty years ago I was advised by a postman to wear a knee-length woollen stocking in bed. This I promptly did, and have not suffered from cramp since then.

Income Tax

Income Accruing Abroad

"H.," who is at present on foreign service, asks whether he and his wife will be liable for income tax, when he is serving in the United Kingdom, in respect of income arising in Australia but not remitted here. The income is applied to reducing loans made to "H." in the voluntary assistance of a relative and in payment of life assurance premiums.

*** Assuming that "H." is not coming to the United Kingdom merely for a temporary stay he will be liable as an ordinary resident to account for tax on the income arising abroad, whether it is remitted or not. There is no separate allowance due to his wife, and in effect the two incomes will be aggregated for taxation. Our correspondent may, however, be entitled to some relief from this taxation—(*a*) on the amount of the premiums paid to the life assurance company, (*b*) in respect of any Australian income tax paid on the income, and (*c*) some small allowance if the assisted relative can fairly be said to be "dependent" on the assistance—but this is unlikely, as the repayments of capital would have to be excluded from the calculation of the assistance.

LETTERS, NOTES, ETC.

Motor Car Insurance

Mr. L. FERRIS-SCOTT, F.C.A. (hon. secretary, Medical Insurance Agency, B.M.A. House, Tavistock Square, W.C.1), writes: In the *Journal* of December 26, 1936, you were good enough to publish a letter, authorized by the Committee of Management of the M.I.A., in which I set out the revised manner of charging premiums under the Doctors' Special Motor Car Policy, which is underwritten only for the M.I.A. at Lloyd's, and the reduced rates charged owing to an increase in the rebate allowed by the M.I.A. and an increase also in the no-claim bonus granted by underwriters. The Agency has received several letters from members interested, and two of the questions which are asked are: Is the no-claim bonus allowed upon transfer from another insurance company or underwriters? The answer, of course, is "Yes"—that by transferring to the Doctors' Special Motor Car Policy medical practitioners gain advantages and lose nothing. The second question is: Are the extra premiums charged for certain defined areas necessarily payable in connexion with the Doctors' Special Motor Car Policy? The answer is that these are not necessarily payable, and in fact are charged by underwriters under this special policy only where the previous claims experience makes it essential. For the rest the extremely low net premiums charged appear to give great satisfaction.

Bromide Intoxication

Dr. J. E. J. PALSER (Muswell Hill) writes: The paper on bromide intoxication in your issue of November 14 (p. 957) and "B. P.'s" inquiry (December 12, p. 1242) about the occurrence of this condition in epilepsy, and the experience of medical officers of asylums and institutions for epileptics, prompt me to record the following. During an appointment which I held for seven months in 1930 and 1931 on the staff of a mental hospital a middle-aged female epileptic imbecile, who had long been receiving the usual doses of potassium bromide, became gradually stuporous, developed constant minor twitchings, sank into coma, and died. About two months later I came across Wagner and Bunbury's paper (*J. Amer. med. Ass.*, 1930, **95**, 1725), which is quoted in the recent paper in the *B.M.J.* and the probable significance of the above case at once occurred to me. The same volume of the *Journal of the American Medical Association* contains accounts of bromide intoxication (not quoted in the recent *B.M.J.* paper) on pages 84 (Harris and Hauser) and 826 (Andrews, quoted from *Virginia Medical Monthly*, 1930, **57**, 304). At about the same time as the above-mentioned case a middle-aged or elderly female psychotic (non-epileptic, non-imbecile) patient, who had been receiving barbitone for a long time, became stuporous and died without definite physical signs of disease. It is perhaps difficult in mental cases to tell whether such deaths are due to sedatives or to the mental condition.

The Earliest Sanatoria in England

Dr. RICHARD J. CYRIAX (Leamington Spa) writes: Dr. George Bodington (1799–1882), of Sutton Coldfield, Warwickshire, is generally, if not universally, recognized as the pioneer of the sanatorium treatment of pulmonary tuberculosis, and if this claim is admitted the institutions in which he carried out this treatment must be regarded as the earliest sanatoria in England. His methods, which consisted principally of exposure to fresh air, graduated exercise, and a nutritious diet, were fully described in his book *An Essay on the Treatment and Cure of Pulmonary Consumption* (1840). He was practising them in 1833, but may have done so previously. In 1836 he became the proprietor of a private lunatic asylum at Driffold House, Sutton Coldfield, and his writings afford definite evidence that during the next few years he received there as resident patients cases not only of insanity but also of phthisis. He then rented the White House, Maney, near Driffold House, for the reception only of cases of phthisis; it was ready for their occupation, if not in actual use, in January, 1840. He is known to have received some cases of phthisis at the White House, but closed it in 1842 or 1843, and then devoted himself entirely to his insane patients at Driffold House. Driffold House was thus the parent institution, but the White House seems to have been the first to be used *solely* for the sanatorium treatment of pulmonary tuberculosis, and hence to have been the earliest sanatorium in England. Both these houses have recently been pulled down. Photographs and descriptions of them appeared in the *British Journal of Tuberculosis*. January, 1925.

False Calls for London Ambulances

Medical practitioners will be glad to know that any person who gives false information which would reasonably lead to the dispatch of one of the London County Council's ambulances is now liable on summary conviction to a penalty up to £25, unless he can satisfy the court that he had reasonable cause to believe that his information was correct. This provision has been obtained by the L.C.C. under its General Powers Act of 1936, in view of the large and growing number of false calls, which may have been malicious in origin, received in the last few years by the London Ambulance Service.

Corrigendum

Owing to an error in the preparation of Dr. L. E. Houghton's article—"Blood Examinations in Pulmonary Tuberculosis"—which was published in the *Journal* of December 19, 1936, "blood count" was printed instead of "Bonsdorff count" in the first four tables under the heading "Prognosis."